

Improving Interactions between Animal Rights Groups and Conservation Biologists

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Abstract: *Invasive species are often considered to be a major threat to biodiversity, leading conservation biologists to often recommend their complete eradication. Animal rights groups typically categorically oppose killing animals, and their opposition has brought eradication attempts of gray squirrels in northern Italy (Europe) and mute swans in Vermont to a halt. As a result native red squirrels may disappear from Europe and ecosystem-wide impacts are expected to be caused by the swan. In contrast, cooperation between managers and animal rights groups has resulted in a successful control program for feral pigs in Fort Worth, Texas (U.S.A.). The philosophical differences between animal rights and conservation biologists' views make cooperation seem unlikely, yet documented cases of cooperation have been beneficial for both groups. We recommend that managers dealing with invasive species should consult with social scientists and ethicists to gain a better understanding of the implications of some of their policy decisions. In addition, we recommend that animal rights groups do more to support alternatives to lethal control, which are often excluded by economic limitations. Prevention of arrival of invasive species via application of the precautionary principle may be an especially productive avenue for such collaboration because it fits the goals and values of both groups.*

Keywords: animal rights, eradication, introduced species, policy

Mejorando las Interacciones entre Grupos Pro Derechos de los Animales y Biólogos de la Conservación

Resumen: *A menudo se considera que las especies invasoras son una amenaza mayor para la biodiversidad, lo que ha llevado a que biólogos de la conservación recomienden su erradicación completa. Los grupos pro derechos de los animales típicamente se oponen categóricamente a matar animales, y su oposición ha detenido intentos para erradicar ardillas grises en el norte de Italia (Europa) y cisnes en Vermont (E.U.A.). Como resultado, las ardillas rojas nativas pueden desaparecer de Europa y se esperan impactos a nivel ecosistema provocados por el cisne. En contraste, la cooperación entre manejadores y grupos pro derechos de los animales ha resultado en un programa de control exitoso de cerdos ferales en Fort Worth, Texas (E.U.A.). Las diferencias filosóficas entre derechos de los animales y biólogos de la conservación hacen ver que la cooperación es poco probable, pero los casos documentados de cooperación han sido benéficos para ambos grupos. Recomendamos que los manejadores que tratan con especies invasoras deben consultar con científicos sociales y éticos para tener un mejor entendimiento de las implicaciones de algunas de sus decisiones. Adicionalmente, recomendamos que los grupos pro derechos de los animales hagan más para apoyar alternativas al control letal, que a menudo son excluidas por limitaciones económicas. La prevención del arribo de especies invasoras por medio de la aplicación del principio precautorio puede ser una vía especialmente productiva para tal colaboración porque se apega a las metas y valores de ambos grupos.*

Palabras Clave: derechos de los animales, erradicación, especies introducidas, política

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Introduction

Environmental issues have become a major concern for policy makers throughout the world. Policy decisions are often said to be based solely on science, but typically incorporate the ethical outlooks of multiple stakeholders. For example, the goals of decision makers are often based on “good judgement achieved through honest discourse” (Wallington & Moore 2005). Nevertheless, a careful explanation of why a particular set of goals is most appropriate is frequently missing, and the lack of an explicit “ecological ethics” is an important problem for ecologists, conservation biologists, and policy makers (Minteer & Manning 2003a, 2005b).

Two types of criticism have been aimed at ecologists because of this lack. The problems we consider here concern invasive, non-native species that have become problematic in their new habitat. Terms such as *invasive* and *exotic* are often used interchangeably in the literature yet they are not identical (e.g., Colautti & MacIsaac 2004). Some philosophers argue that ecologists need to more clearly define their terms and avoid loaded terminology (Chew & Laubichler 2003; Larson 2005; Sagoff 2005). Such criticism has been fairly superficial, usually does not provide a truly constructive course, and often relies on emotionally charged terminology (Perry & Schueler 2003; Simberloff 2003). We use the term *invasive* throughout our text and refrain from otherwise addressing this complex issue. Another criticism focuses on the appropriateness of particular measures used by managers. For example, Lessard et al. (2005) recently debated the appropriateness of lethal control of species in situations where lack of action might lead to population or species extinction.

Of particular concern has been another branch of environmental ethics, animal rights (e.g., Ehrenfeld 1991). Animal rights philosophy is often poorly understood by managers, perhaps contributing to the combative interactions that have repeatedly occurred between the two groups (Ehrenfeld 1991; Thompson & Lapointe 1995). The publication of Singer's (1975) *Animal Liberation* is considered by many to be the birth of the modern animal rights philosophical debate (Jasper & Nelkin 1992). Nevertheless, Singer is a utilitarian, not a rights philosopher, and only uses rights language in a loose sense. The animal rights movement takes its name from the writings of Tom Regan, who first included animals in a rights context (Regan 1976). The main paradigm of animal rights advocates is that, as with human rights, at least some rights, first and foremost the right to life, should also apply to some animals. Killing an animal, except in extreme cases such as self-protection, is considered unethical (Regan 1976).

Although the work of these two authors falls into the category of “animal welfare ethics,” they represent views that many consider greatly distinct (e.g., Regan

& Francione 1992; Glenn 1991). Regan distinguishes between the more developed “subjects of a life” that possess rights and the more primitive ones that do not. Singer, in contrast, considers that all sentient organisms deserve moral consideration. He draws a distinction between self-conscious animals—which he views as “persons” and therefore their killing is to be condemned—and other animals, for which he can envision specific cases in which it would be moral to kill them (Singer 1993). Singer explicitly acknowledges that “sentience . . . does not mean that the being has an interest in continuing to live” and clearly states that “the term ‘animal’ . . . covers too diverse a range of lives for one principle to apply to all of them” (Singer 1993: 131). The growing influence of the animal rights movement on public opinion, education, and legislation has increasingly put it at odds with ecologists and wildlife biologists, who sometimes advocate lethal control as part of a management regime.

Over the years several authors have attempted to codify other views, resulting in environmental ethics as diverse as animal rights philosophies. Leopold (1948) is famous for articulating his “land ethic,” which “simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.” Modern environmental ethics views range from “ecofeminists,” who view the oppression of women as stemming from the same urge for domination that is also responsible for environmental degradation, to “deep ecologists,” who claim that all living things have the same right to live and flourish. A broad distinction exists between anthropocentric views, which put humans and human interests as the highest or even only relevant considerations, and ecocentric views, which place more value on the environment with or without the human proponent. Nevertheless, the existing literature has large gaps (Minteer & Collins 2005a, 2005b).

Our goal is to initiate a collaborative discussion between ethicists and scientists, as called for by Minteer and Collins (2005b), focusing on the ethical problems associated with control of invasive species. A deep philosophical chasm lies between the two groups (Callicott 1994; Varner 1998). Recently, in an article on religions and environmentalists, Callicott (2001) called for “[a] middle path between claims to absolute truth and universality, on the one hand, and claims of absolute difference and otherness, on the other, and between the politics of hegemony and the politics of identity.” In this spirit, we are looking for a pragmatic compromise that would allow the gap between environmentalists and animal rights advocates to be bridged in some situations. One such area is prevention of trade in animals that have the potential of becoming invasive, an issue both sides agree on but neither directs major efforts toward. To that end, we focus on Minteer's classification of “principle-ist” approaches, which generalize specific policy recommendations from

a smaller set of predetermined philosophical principles, and on "paradigmatic contextualism," which bases policy on the specific case and its implications. To illustrate the ethical complexity and the importance of achieving an operational truce between wildlife managers and animal rights advocates, we used case studies that identify areas of agreement and disagreement inherent in the ethical positions of the two groups. We also examined the feasibility of uniting managers and animal rights activists for the purpose of developing a pragmatic approach to invasive species and their control.

The Problem and Management of Invasive Species

Biologists consider invasive species to be one of the greatest threats to biodiversity conservation. In extreme cases, such as that of Nile perch (*Lates niloticus*) in the African rift lakes (Kaufman 1992) or the brown treesnake (*Boiga irregularis*) on Guam (Rodda et al. 1997), a single invasive species can radically alter whole ecosystems. For example, the brown treesnake is responsible for the extinction of entire species and island populations of species that can still be found elsewhere. The number of invasive species around the globe is growing rapidly and evidence shows that their removal can lead to recovery of highly endangered species (Pimentel 2002; Ruiz & Carlton 2003; Samways et al. 2005).

Reactions of biologists and policy makers to the perceived crisis posed by invasive species have occurred at two broad scales. When an invasive species is already present, the favored response has generally been complete removal of the introduced species, often by lethal means (Bomford & O'Brien 1995; Veitch & Clout 2002; Zavaleta 2002). When eradication is not feasible other alternatives, such as containment or maintenance at low densities, are attempted (e.g., Perry et al. 1998). Nevertheless, the preferred action for managers is establishing a precautionary mechanism that prevents the arrival of invasive species or at least reduces the number of propagules arriving (Wonham et al. 2005). When achieved, this avoids the need for containment or eradication, prevents ecological impacts, and reduces management costs and economic impacts (e.g., Mack et al. 2000; Wittenberg & Cock 2001; IUCN Invasive Species Specialist Group 2006). The Convention on Biological Diversity (1992) provides an international framework for such efforts.

Unfortunately, establishing success in the absence of an invasion is difficult, and policy makers often better respond to a perceived crisis than to a less-concrete future threat. For example, recent news articles describe the loss of funding for brown treesnake interdiction efforts in the Pacific in general (Donato 2007) and in Hawaii in particular (Godvin 2007). Eradication and containment efforts are more commonly used and publicized than is prevention: they attract increased media attention and

can be presented as a worthy fight against an immediate threat. Consequently, the number of invasives documented worldwide is still growing, and the scope of prevention activities often seems insufficient. Moreover, the control methods eventually adopted by managers faced with an acute problem are often unacceptable to the animal rights community. This can lead to costly and time-consuming conflict and may make management impossible. The following three case studies illustrate the interaction between managers and the animal rights community over handling of invasive species.

Case Studies

American Gray Squirrel

The American gray squirrel (*Sciurus carolinensis*) is native to eastern North America and was first introduced into the Piedmont area in northwestern Italy in 1948 (Bertolino & Genovesi 2003). Two pairs were imported from Washington, D.C., and released at Stupinigi (province of Turin). The introduced population increased exponentially, a pattern previously observed in the British Isles, where the invader displaced the native red squirrel (*S. vulgaris*; Gurnell & Pepper 1993; Gurnell 1996). In 1989 the National Wildlife Institute (NWI; the Italian government agency for wildlife research and conservation) warned all local administrations responsible for pest-management plans and the environmental and agricultural ministries of the potential for drastic expansion of the gray squirrel's range and of the risks related to its presence (Bertolino & Genovesi 2003). In 1996 the NWI, in cooperation with the University of Turin, proposed a three-step management action plan: (1) continuous monitoring of the gray squirrel's range; (2) a trial eradication by the NWI to assess the feasibility of total removal; and (3) planning and implementation of the eradication of the entire Piedmont population by local authorities, if feasible.

In an April 1997 consultation meeting, animal rights organizations opposed the eradication, initially favoring translocation back to North America or neutering the whole population. Nevertheless, their suggestions were rejected because of cost (Genovesi & Bertolino 2001), and most animal rights groups eventually approved the protocol adopted. The final procedure included (1) live-trapping of the squirrels to avoid risks to nontarget species; (2) frequent checks of traps to reduce the captivity time of animals; (3) anesthesia with halothane, a tranquilizer that reduces stress in rodents; (4) subsequent euthanasia of animals with an overdose of halothane; and (5) constant supervision of the process by a veterinarian. The trial eradication began in mid-April 1997. During the two trapping sessions (eight trapping days), 188 animals, all gray squirrels, were captured and euthanized.

In June 1997, the League Against Hunting and the League Against Vivisection, animal rights groups that did not approve of the protocol, charged the coordinator of the trial eradication and the director of the NWI with illegal hunting, damage to state property, and cruelty to animals. The court case that followed halted the trial eradication, making it impossible to estimate the effort needed to remove the entire population. In December 1999 the judge ruled that the two NWI officers were guilty of illegal hunting and cruelty to animals. By then the gray squirrel was present in 880 km², had replaced the red squirrel as it spread, and eradication was no longer considered feasible. The officers were acquitted by the Appeals Court in July 2000, but the 3-year legal struggle prevented managers from acting before the population became too large to control (Genovesi & Bertolino 2001; Bertolino & Genovesi 2003).

Mute Swan

Mute Swans (*Cygnus olor*) originate in Eurasia, but were broadly introduced elsewhere as ornamental wildlife in parks and estates. They were first brought to North America in the 1800s. Populations rapidly increased in number and geographical range, began to have adverse impacts on native species, and were often identified as a nuisance species (Cobb & Harlan 1980; Allin et al. 1987; Atlantic Flyway Council 2003). Control efforts often rely on making eggs nonfertile through shaking, but lethal control of adults is used when numbers are high enough to create considerable environmental degradation at a locality. Minter (2003) summarized the case of Arrowhead Mountain Lake in Vermont, which is a representative example. In 1997 following public hearings on the topic, the Vermont Fish and Wildlife Department announced that lethal control was necessary. Following pressure from residents and national animal rights organizations, a costly attempt was made to use nonlethal methods, resulting in the capture and translocation of two animals and the decision to revert to lethal control. Two birds were euthanized the next year, resulting in an escalation of conflict.

In response to legal challenges, the U.S. Court of Appeal for the District of Columbia determined in December 2001 that Mute Swans are federally protected under the Migratory Bird Treaty Act and thus are regulated solely by the U.S. Fish and Wildlife Service (USFWS) (Cucuzzella 2004). Several state wildlife agencies then applied to the USFWS for permits to control Mute Swan populations. Following a review process, the USFWS issued a Mute Swan depredation permit in August 2003. A suit against the USFWS decision was quickly brought before the U.S. District Court for the District of Columbia, which granted a preliminary injunction (Cucuzzella 2004). The case was subsequently settled, with the USFWS canceling nationwide all permits authorizing the killing of Mute Swans. In March 2004, Wayne Gilchrest, Chairman of the House

Subcommittee on Fisheries Conservation, Wildlife and Oceans, introduced the "Migratory Bird Treaty Reform Act of 2004" (H.R. 4114), which was intended to exempt "exotic" bird species from "federal protections," but the bill never became law (Markarian & Lovvorn 2004).

Feral Pigs

European pigs (*Sus scrofa*) were first introduced to the continental United States from Europe in 1540 and were brought to Texas for hunting purposes and food production (Towne & Wentworth 1950; Mungall & Sheffield 1995). A lucrative hunting industry now relies on the ongoing existence of feral pigs (Taylor 1991; Rollins 1993; Mungall & Sheffield 1995). Natural spread and capture and translocation of animals from existing populations to create additional hunting opportunities had by 2003 resulted in an increasing presence of feral pigs in suburban and even urban areas (Brown 1985; Gipson et al. 1998). Feral pig populations now occur in 32 states and 4 Canadian provinces (Denkhaus & Tuttle 2006). These animals cause considerable damage to the ecosystem by rooting up vegetation and competing for food with native species (Taylor 1991; Denkhaus & Tuttle 2006). Managers generally favor eradication, but acknowledge the likelihood of failure as a result of budgetary constraints and public resistance (Denkhaus & Tuttle 2006).

Fort Worth Nature Center and Refuge (FWNC&R) is an urban green space managed as a native landscape, which includes control of invasive organisms (Denkhaus & Tuttle 2006). Managers started seeing damage thought to be caused by feral pigs in July 1999 and first saw animals soon thereafter. Several attacks on humans occurred just outside the FWNC&R in the months that followed. Managers began planning removal immediately after the attacks. Fencing and relocation were not possible, which led to a decision to use live trapping and euthanasia. Animal rights organizations and other stakeholders were consulted and agreed that protection of the native landscape justified removal of the pigs. Nevertheless, animal rights organizations objected to public hunting as the eradication method and to the use of pig carcasses for human consumption. As a result FWNC&R personnel were responsible for control and movement of carcasses to remote sites. Over 70 animals were killed by mid-2004, and pig damage had decreased markedly.

Discussion

Issues of environmental ethics are becoming increasingly relevant, yet remain complicated and open to multiple interpretations (Decker & Brown 1987; Thompson & Lapointe 1995; Lessard et al. 2005; Minter & Collins 2005a). Both animal rights activists and conservation biologists focus on topics generally categorized by the public

as green issues. Both groups value nature and/or living organisms over at least some economic considerations. Both also view the role of humanity as preserver and supporter, rather than mere exploiter, of natural resources, and have members who do not view animals or the environment as resources at all. Judge Sullivan's opinion in the Mute Swan suit acknowledges this: "there is no question that all parties before the Court have the interests of the environment . . . at heart."

As two of our case studies demonstrate, animal rights organizations and biological conservationists often find themselves on opposite sides of environmental policy debates because they start out from differing philosophical outlooks. Ehrenfeld (1991) suggests that "conservation managers and researchers, some of whom have been contemptuous of the idea of animal rights and its proponents, would do well to adopt . . . cooperation . . . it should be possible to develop shared activities that benefit both sides." Unfortunately, we see little evidence that this good advice has been adopted by either side. Over a decade ago the argument over the removal of Olympic Mountain goats produced the only citation (Hutchins 1995) of Ehrenfeld's recommendation within the field. The responses of managers and animal rights proponents to environmental issues remain mostly diametrically opposite, leading to ongoing friction (Thompson & Lapointe 1995). There are two main axes along which such responses can be separated. First, as demonstrated by the examples earlier, is focus. Animal rights philosophy focuses on the welfare and lives of individual animals, whereas managers deal with populations and communities. Managers typically employ an ecocentric "pragmatic contextualism," whereas animal rights proponents adhere to a zoocentric "principalist approach" (Minteer et al. 2004). The second axis is temporal, with animal rights organizations normally becoming involved well after an introduction has occurred (a reactive approach) and wildlife managers preferring to address the issue prior to arrival or establishment of the invasive species (a proactive approach).

Lessons from the Case Studies

More emphasis is now being given to the issue of identifying and engaging stakeholders (e.g., Ostrom et al. 1994). The squirrel and swan cases both demonstrate that ignoring public opinion, in these cases animal rights groups, can jeopardize conservation efforts. The squirrel causing the trouble in Italy originated on a different continent and had a past history of replacing native species elsewhere, but favoring the native species meant removing the introduced animals. Most scientists supported the eradication but animal rights groups opposed removal. Discussions with animal rights organizations led to changes to the original project, but some animal rights groups steadfastly favored nonlethal alternatives, which managers considered economically un-

feasible (Genovesi 2000; Genovesi & Bertolino 2001; Bertolino & Genovesi 2003; Perry 2004). The swan was likewise a sympathetic invasive that was not considered by managers to be amenable to nonlethal controls and for which animal rights organizations would not accept lethal measures (Minteer 2003). In both cases, this lack of agreement led to protracted legal wrangling.

From the perspective of the animal rights community, the outcome of both cases was a success in that management actions involving lethal control were halted. Nevertheless, the biological fallout (decline of the native squirrel in Italy, ecological impacts in Vermont) was not one they desired. For wildlife managers both cases were unmitigated disasters. Adoption of alternative plans may have allowed both sides to realize an environmentally and morally acceptable outcome. A pragmatic decision by animal rights organizations to support the attempt would have prevented the need to control a much larger squirrel population and the ecological consequences the delay had on other species. The same is true for managers adopting nonlethal methods, possibly with financial or veterinary help from animal rights supporters. Nevertheless, such solutions are not always possible. For example, neither funding nor relocation sites could be found for the feral pigs causing damage in Fort Worth (Denkhaus & Tuttle 2006). Nevertheless, well-publicized attacks by feral pigs on humans as a crucial element provided public support for removal (Denkhaus & Tuttle 2006). Conservation biologists have long complained about the lack of public interest in species that are not "cute" (e.g., Yen 1999). As indicated by the lack of animal rights response to the killing of brown treesnakes on Guam and the minimal response to campaigns against the cane toad (*Bufo marinus*) in Australia, the ability of animal rights advocates to affect outcomes is closely tied to the public perception of the problem organism.

Finding Common Ground

Reducing the risks associated with invasive species is a desirable "public good" with broad benefits (Perrings et al. 2002). The question is how to combine this plurality of environmental values (Minteer & Manning 2003b) into a single, effective management regime for addressing the problem of invasive species. Despite the poor record, there is common ground between wildlife managers and animal rights activists (e.g., Thompson & Lapointe 1995). A first step is to recognize that, even though the two groups place their emphases on different elements, both have a shared interest in animal welfare (Schmidt 1990). Wildlife managers often do care about individuals (e.g., Langkilde & Shine 2006), and animal rights activists are concerned about populations and ecosystems. We believe managers should be more open to exploring nonlethal alternatives, and animal rights groups should understand the motivation behind eradication attempts and

be more involved in providing the extra funding necessary to support preventative measures. From the management perspective, short-term delays to implementation caused by early discussions between the groups will be more than offset by avoiding long-term legal and public-relations complications. For animal rights organizations limited resources can be funneled to solving the problem instead of funding lawyers. Nonetheless, we recognize that reaching agreement on these issues is likely to remain difficult because of the underlying philosophical differences and the lack of funding to support preventative measures.

For policy makers ecological damage is often of secondary importance, and the economic costs, which are estimated in the billions of U.S. dollars (Pimentel et al. 2000), are the main concern. Although economic considerations usually take precedence over moral or social ones for policy makers, they are usually also highly concerned with their public image and sensitive to public pressure. Because preventing an introduction addresses the concerns of both groups—it avoids ecological damage and avoids lethal control—there is philosophical and strategic agreement between the groups on the desirability of a proactive approach. For example, policy makers have generally been less than eager to invest in precautionary measures to prevent the spread of invasive species, such as the continued spread of the brown treesnake, which threatens native species at multiple locations (Rodda et al. 1997). As an example of joint benefit, policy makers spurred by pressure from animal rights proponents might allocate more funds to prevention projects, allowing for solutions that are attractive to both groups.

Both groups are concerned, albeit for different reasons, about the international pet trade. The issue of pets (or “companion animals,” as they are often known in the animal rights literature) has been a contentious one within that community. At one end, Appleby (1999:157, 159) acknowledges that “for most people the biggest question that directly affects animals is to keep or not to keep a pet” and concludes “Given due thought and commitment, a decision to keep a pet seems reasonable.” At the other end, Animal Rights Network (2005) has stated that “commerce in domestic and exotic animals for the pet trade should be abolished.” In a similar vein the Humane Society has recently called for restricting the trade in large cats such as lions and tigers (Humane Society 2003), and Animal Awareness (2007) states “Animal Awareness does not condone buying and/or selling any animals.” Thus, there is not complete agreement within the animal rights community on this issue. One reason the concern over the pet trade is shared by the conservation community is the damage to wild populations that released, escaped, and roaming pets cause (Nash 2005). Another is that trade in general and the pet trade in particular are sources of many biological invasions (Perrings et al.

2002; Perry et al. 2003; reviewed in Ruiz & Carlton 2003; Ericson 2005). Both groups would benefit from acknowledging they already have common ground and cooperating on changing the status quo. Entities such as CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora: <http://www.cites.org/>) and TRAFFIC (the wildlife trade monitoring network: <http://www.traffic.org/Home.action>) would be obvious partners for such discussions.

Although our focus is on non-native invasives, the term *invasive* has also been used occasionally in another context. Native species can become weedy, disruptive, or damaging (Garrott et al. 1993), raising issues similar to those discussed earlier. For example, white-tailed deer (*Odocoileus virginianus*) are generally considered by wildlife professionals to be overpopulated in the United States, and their numbers are thought to be higher now than when Europeans first arrived (Hutchins 2007). Here, as with other problem native species, the management goal is typically ongoing control, rather than eradication. Traditional control activities, such as hunting, are opposed by the animal rights community. They prefer measures such as relocation and chemical sterilization, which managers consider impractical because of cost (Garrott et al. 1993; Hutchins 2007). The impasse is not beneficial to the stated goals of either side because large deer herds negatively affect habitats and deer suffer from starvation, lethal interactions with vehicles, and disease (Côté et al. 2004; Hutchins 2007).

Hutchins (2007) thinks the sides cannot cooperate. We disagree and see three ways in which such cooperation could form. First, one of the main causes of deer population expansion is the removal of predators such as wolves (Côté et al. 2004). Animal rights proponents could support the ongoing but contentious efforts of conservationists to restore wolves to North America (e.g., Mech 1995). Another, primary cause of deer population increases is habitat fragmentation and associated changes in vegetation (Côté et al. 2004). This too is an issue conservationists are concerned about, and public support from the animal rights community can serve to reduce this ongoing problem. Finally, animal rights organizations have often recommended the use of nonlethal control methods, yet rarely offered to pay for the extra expense. Doing so would preclude managers from arguing that such solutions are financially impractical and help reduce the use of lethal controls.

Scientists, managers, and ethicists need to more frequently, thoroughly, and positively discuss the issues of environmental ethics (Minteer & Collins 2005b). We believe that the pragmatic approach, with greater emphasis on preventive measures, could help environmentalists and animal rights advocates reach what Callicott (2001), in a different context, called a “middle path” that, as demonstrated by Varner (1998), can be acceptable and beneficial for both. An example of this is the PlantRight

initiative (<http://www.plantright.org/whattodo/>), which brought together the horticultural community, environmental groups, and scientists to identify ways to reduce the propagation of invasive plants.

In another example, juvenile red-eared sliders (*Trachemys scripta*) may soon be sold again in pet stores (Thornton 2007). This move is opposed by the Humane Society of the United States on the basis of animal welfare concerns (Thornton 2007). Managers should likewise be eager to avoid further spread of this species, which has become established in the Caribbean and elsewhere (Perry et al. 2007) and is known to compete with or consume native species (Cadi & Joly 2004). Collaboration to block this move can address the concerns of both sides. Unfortunately, to our knowledge neither managers nor animal rights groups have made overtures toward one another on this matter.

Most scientists and managers are suspicious of animal rights involvement, which has often been a destructive force in past conservation efforts, and scientists and animal rights activists tend to have simplistic and often stereotyped views of each other (Decker & Brown 1987; Herzog 1990; Herzog et al. 1997). Nonetheless, the two groups have many shared goals and a lot to contribute. Scientists and managers bring both knowledge of situations that are not well publicized and an array of approaches and skills that can be brought to bear on the problem. Animal rights groups are highly motivated, well organized, and often politically influential. We believe that cooperation between the two groups is possible and desirable and that prevention of species invasion is an obvious area in which to begin. Prevention efforts are already the preferred option for managers and desirable and philosophically acceptable to animal rights advocates. Enhanced collaboration in this arena could improve the chances of successful containment, and both groups have much to gain from such cooperation.

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Literature Cited

- Allin, C. G., G. G. Chasko, and T. P. Husband. 1987. Mute Swans in the Atlantic flyway: a review of the history, population growth, and management needs. *Transactions of the Northeastern Section of the Wildlife Society* **44**:32–47.
- Animal Awareness. 2007. Companion animals. Animal awareness. Malta. Available from http://www.animalawareness.org/pages/types_companion.html (accessed June 2007).
- Animal Rights Network. 2005. An animal rights platform. Pages 146–149 in N. Treanor, editor. *Animal rights*. Greenhaven Press, Detroit, Michigan.
- Appleby, M. C. 1999. What should we do about animal welfare? Blackwell Science, Oxford, United Kingdom.
- Atlantic Flyway Council. 2003. Mute swan management plan 2003–2013. Atlantic Flyway Council, U.S. Fish and Wildlife Service, Washington, D.C. Available from http://www.pgc.state.pa.us/pgc/lib/pgc/swans/pdf/mute_swan_plan.pdf (accessed May 2005).
- Bertolino, S., and P. Genovesi. 2003. Spread and attempted eradication of the grey squirrel (*Sciurus carolinensis*) in Italy, and consequences for the red squirrel (*Sciurus vulgaris*) in Eurasia. *Biological Conservation* **109**:351–358.
- Bomford, M., and P. O'Brien. 1995. Eradication or control for vertebrate pests? *Wildlife Society Bulletin* **23**:249–255.
- Brown, L. N. 1985. Elimination of a small feral swine population in an urbanizing section of central Florida. *Florida Scientist* **48**:120–123.
- Cadi, A., and P. Joly. 2004. Impact of the introduction of the red-eared slider (*Trachemys scripta elegans*) on survival rates of the European pond turtle (*Emys orbicularis*). *Biodiversity and Conservation* **13**:2511–2518.
- Callicott, J. B. 1994. Moral monism in environmental ethics. *Journal of Philosophical Research* **19**:51–60.
- Callicott, J. B. 1999. *Beyond the land ethic: more essays in environmental philosophy*. State University of New York Press, Albany, New York.
- Callicott, J. B. 2001. Multicultural environmental ethics. *Deadalus* **130**:77–97.
- Chew, M. K., and M. D. Laubichler. 2003. Natural enemies—metaphor or misconception? *Science* **301**:52–53.
- Cobb, J. S., and M. M. Harlan. 1980. Mute swan (*Cygnus olor*) feeding and territoriality affects diversity and density of rooted aquatic vegetation. *American Zoologist* **20**:882.
- Colautti, R. I., and H. J. MacIsaac. 2004. A neutral terminology to define 'invasive' species. *Diversity and Distributions* **10**:135–141.
- Convention on Biological Diversity (CBD). 1992. *Convention on Biological Diversity*. CBD, Montreal. Available from <http://www.biodiv.org/convention/default.shtml> (accessed May 2005).
- Côté, S. D., T. P. Rooney, J.-P. Tremblay, C. Dussault, and D. M. Waller. 2004. Ecological impacts of deer overabundance. *Annual Review of Ecology, Evolution, and Systematics* **35**:113–147.
- Cucuzzella, P. J. 2004. The Mute Swan case, the *Fund for Animals, et al. v. Norton, et al.*: national, regional, and local environmental policy rendered irrelevant by animal rights activists. *University of Baltimore Journal of Environmental Law* **11**:101–113.
- Decker, D. J., and T. L. Brown. 1987. How animal rightists view the "wildlife management-hunting system." *Wildlife Society Bulletin* **15**:599–602.
- Denkhaus, R., and S. Tuttle. 2006. Wild hogs (*Sus scrofa*). Pages 266–286 in C. E. Adams, K. J. Lindsey, and S. J. Ash, editors. *Urban wildlife management*. CRC Press, Boca Raton, Florida.
- Donato, A. E. 2007. Guam gains support in fight vs. brown tree snakes. *Saipan Tribune* 26 March. Available from <http://www.saipantribune.com/newsstory.aspx?cat=1&newsID=66906> (accessed June 2007).
- Ehrenfeld, D. 1991. Conservation and the rights of animals. *Conservation Biology* **5**:1–3.
- Elton, C. S. 1927. *Animal ecology*. Sidgwick & Jackson, London.
- Ericson, J. A. 2005. The economic roots of species invasions. *Iguana* **12**:198–201.
- Garrott, R. A., P. J. White, and C. A. Vanderbilt White. 1993. Overabundance: an issue for conservation biologists? *Conservation Biology* **7**:946–949.
- Genovesi, P. 2000. Guidelines for eradication of terrestrial vertebrates: a European contribution to the invasive alien species issue. Council of Europe publication tpvs65e-2000. Council of Europe, Brussels.

- Genovesi, P., and S. Bertolino. 2001. Human dimension aspects in invasive alien species issues: the case of the failure of the grey squirrel eradication project in Italy. Pages 113–119 in J. A. McNeely, editor. *The great reshuffling: human dimensions of invasive alien species*. IUCN (World Conservation Union), Gland, Switzerland, and Cambridge, United Kingdom.
- Gipson, P. S., B. Hlavachick, and T. Berger. 1998. Range expansion by wild hogs across the central United States. *Wildlife Society Bulletin* 26:279–286.
- Glenn, T. C. 1991. Animal rights/animal welfare. *Conservation Biology* 5:436–437.
- Godvin, T. 2007. Inouye aide: budget cut raises risk of snake slipping in. *The Honolulu Advertiser* 29 March 2007. Available from <http://the.honoluluadvertiser.com/article/2007/Mar/29/br/br8396205714.html> (accessed June 2007).
- Gurnell, J. 1996. The effects of food availability and winter weather on the dynamics of a grey squirrel population in southern England. *Journal of Applied Ecology* 33:325–338.
- Gurnell, J., and H. Pepper. 1993. A critical look at conserving the British red squirrel *Sciurus vulgaris*. *Mammal Review* 23:125–136.
- Herzog, H. A., Jr. 1990. Philosophy, ethology, and animal ethics. *Trends* 6:14–17.
- Herzog, H. A., Jr., B. Dinoff, and J. R. Page. 1997. Animal rights talk: moral debate over the internet. *Qualitative Sociology* 20:399–418.
- Humane Society. 2003. HSUS urges U.S. Senate to restrict pet trade in exotic big cats. Humane Society, Washington, D.C. Available from http://www.hsus.org/press_and_publications/press_releases/hsus_urges_us_senate_to_restrict_pet_trade_in_exotic_big_cats.html (accessed June 2007).
- Hutchins, M. 1995. Olympic mountain goat controversy continues. *Conservation Biology* 9:1324–1326.
- Hutchins, M. 2007. The limits of compassion. *The Wildlife Professional Summer* 2007:42–44.
- IUCN (World Conservation Union) Invasive Species Specialist Group. 2006. IUCN guidelines for the prevention of biodiversity loss caused by alien invasive species. IUCN, Gland, Switzerland. Available from <http://www.iucn.org/themes/ssc/publications/policy/invasivesEng.htm> (accessed August 2007).
- Jasper, J. M., and D. Nelkin. 1992. *The animal rights crusade: the growth of a moral protest*. The Free Press, New York.
- Kaufman, L. 1992. Catastrophic change in species-rich freshwater ecosystems: the lessons of Lake Victoria. *BioScience* 42:846–858.
- Langkilde T., and R. Shine. 2006. How much stress do researchers inflict on their study animals? A case study using a scincid lizard, *Eulamprus beatwolei*. *Journal of Experimental Biology* 209:1035–1043.
- Larson, B. M. H. 2005. The war of the roses: demilitarizing invasion biology. *Frontiers in Ecology and the Environment* 3:495–500.
- Leopold, A. 1948 [1987]. *A Sand County almanac, and sketches here and there*. Oxford University Press, New York.
- Lessard, R. B., S. J. D. Martell, C. J. Walters, T. E. Essington, and J. F. Kitchell. 2005. Should ecosystem management involve active control of species abundances? *Ecology and Society* 10: <http://www.ecologyandsociety.org/vol10/iss2/art1/>.
- Lubchenco, J., R. Davis-Born, and B. Simler. 2002. Lessons from the land for protection in the sea: the need for a new ocean ethic. *Open Spaces* 5:10–19.
- Mack, R. N., D. Simberloff, W. M. Lonsdale, H. Evans, M. Clout, and F. A. Bazzaz. 2000. Biotic invasions: causes, epidemiology, global consequences, and control. *Ecological Applications* 10:689–710.
- Markarian, M., and J. R. Lovvorn. 2004. Swan song? Giving a voice to mute swans in the Chesapeake Bay. *University of Baltimore Journal of Environmental Law* 11:115–149.
- Mech, L. D. 1995. The challenge and opportunity of recovering wolf populations. *Conservation Biology* 9:270–278.
- Minteer, B. A. 2003. Valuing nature: ethical perspectives on the loss of biodiversity. Pages 75–97 in S. Spray and K. McGlothlin, editors. *The loss of biodiversity*. Rowman & Littlefield, Lanham, Maryland, Maryland.
- Minteer, B. A., and R. E. Manning. 2003a. Conservation: from deconstruction to reconstruction. Pages 3–16 in B. A. Minteer and R. E. Manning, editors. *Reconstructing conservation: finding common ground*. Island Press, Washington, D.C.
- Minteer, B. A., and R. E. Manning. 2003b. Finding common ground: emerging principles for a reconstructed conservation. Pages 335–349 in B. A. Minteer and R. E. Manning, editors. *Reconstructing conservation: finding common ground*. Island Press, Washington, D.C.
- Minteer, B. A., and J. P. Collins. 2005a. Why we need an “ecological ethics.” *Frontiers in Ecology and the Environment* 3:332–337.
- Minteer, B. A., and J. P. Collins. 2005b. Ecological ethics: building a new tool kit for ecologists and biodiversity managers. *Conservation Biology* 19:1803–1812.
- Minteer, B. A., E. A. Corley, and R. E. Manning. 2004. Environmental ethics beyond principle? The case for a pragmatic contextualism. *Journal of Agricultural and Environmental Ethics* 17:131–156.
- Mungall, E., and W. J. Sheffield. 1995. *Exotics on the range*. Texas A&M University Press, College Station, Texas.
- Nash, A.-E. 2005. The case against captive reptiles and amphibians. *Iguana* 12:269–272.
- Ostrom, E., R. Gardner, and J. Walker. 1994. *Rules, games, and common-pool resources*. University of Michigan, Ann Arbor, Michigan.
- Perrings, C., M. Williamson, E. B. Barbier, D. Delfino, S. Dalmazzone, J. Shorgen, P. Simmons, and A. Watkinson. 2002. Biological invasion risks and the public good: an economic perspective. *Conservation Ecology* 6:<http://www.consecol.org/vol6/iss1/art1>.
- Perry, D. 2004. Animal rights and environmental wrongs: the case of the grey squirrel in northern Italy. *Essays in philosophy*. Volume 5. Humboldt State University, Arcata, California. Available from <http://www.humboldt.edu/~essays/perry1.html> (accessed May 2005).
- Perry, G., and F. W. Schueler. 2003. Response to Chew and Laubichler. *Science* 301:1480–1481.
- Perry, G., E. W. Campbell III, G. H. Rodda, and T. H. Fritts. 1998. Managing island biotas: brown treesnake control using barrier technology. Pages 138–143 in R. O. Baker and A. C. Crabb, editors. *Proceedings of the 18th vertebrate pest management conference*. University of California Press, Davis, California.
- Perry, G., J. Pierce, D. Griffin, G. van Buurt, and J. Lazell. 2003. *Elaphe guttata guttata* (Corn Snake). Distribution. *Herpetological Review* 34:264.
- Perry, G., J. L. Owen, C. Petrovic, J. Lazell, and J. Egelhoff. 2007. The red-eared slider, *Trachemys scripta elegans*, in the British Virgin Islands. *Applied Herpetology* 4:88–89.
- Pimentel, D., editor. 2002. *Biological invasions: economic and environmental costs of alien plant, animal, and microbe species*. CRC Press, Boca Raton, Florida.
- Pimentel, D., L. Lach, R. Zuniga, and D. Morrison. 2000. Environmental and economic costs of nonindigenous species in the United States. *BioScience* 50:53–65.
- Regan, T. 1976. Do animals have a right to life? Pages 197–204 in T. Regan and P. Singer, editors. *Animal rights and human obligations*. Prentice-Hall, Englewood Cliffs, New Jersey.
- Regan, T., and G. Francione. 1992. A movement’s means create its ends. *Animals’ Agenda January/February*:40–43.
- Rodda, G. H., T. H. Fritts, and D. Chiszar. 1997. The disappearance of Guam’s wildlife. *BioScience* 47:565–575.
- Rollins, D. 1993. Statewide attitude survey on feral hogs in Texas. Pages 1–8 in C. W. Hanselka and J. F. Cadenhead, editors. *Feral swine: a compendium for resource managers*. Texas Agricultural Extension Service, Kerrville, Texas.
- Ruiz, G. M., and J. T. Carlton, editors. 2003. *Invasive species: vectors and management strategies*. Island Press, Washington, D.C.
- Sagoff, M. 2005. Do non-native species threaten the natural environment? *Journal of Agricultural and Environmental Ethics* 18:215–236.

- Samways, M. J., S. Taylor, and W. Tarboton. 2005. Extinction re-prieve following alien removal. *Conservation Biology* **19**:1329–1330.
- Schmidt, R. H. 1990. Why do we debate animal rights? *Wildlife Society Bulletin* **18**:459–461.
- Simberloff, D. 2003. Confronting introduced species: a form of xenophobia? *Biological Invasions* **5**:179–192.
- Singer, P. 1975. *Animal liberation: a new ethics for our treatment of animals*. Random House, New York.
- Singer, P. 1993. *Practical ethics*. 2nd edition. Cambridge University Press, Cambridge, United Kingdom.
- Taylor, R. 1991. The feral hog in Texas. Federal aid report series 28. Texas Parks and Wildlife Department, Austin, Texas.
- Thompson, T. R., and G. D. Lapointe. 1995. Learning from animal activists: a workshop approach. *Wildlife Society Bulletin* **23**:588–593.
- Thornton, K. C. 2007. Tiny pet turtles could make a comeback: red-eared sliders shed their dirty reputation with help of senator, scientists. MSNBC Interactive, Redmond, Washington. Available from <http://www.msnbc.msn.com/id/19116437/> (accessed June 2007).
- Towne, C. W., and E. N. Wentworth. 1950. *Pigs from cave to corncob*. University of Oklahoma Press, Norman, Oklahoma.
- Varner, G. E. 1998. In nature's interests?: interests, animal rights, and environmental ethics. Oxford University Press, Oxford, United Kingdom.
- Veitch, C. R., and M. N. Clout, editors. 2002. *Turning the tide: the eradication of invasive species*. Proceedings of the international conference on eradication of island invasives. IUCN (World Conservation Union) SSC Invasive Species Specialist Group, Gland, Switzerland.
- Wallington, T. J., and S. A. Moore. 2005. Ecology, values, and objectivity: advancing the debate. *BioScience* **55**:873–878.
- Wittenberg, R., and M. J. W. Cock, editors. 2001. *Invasive alien species: a toolkit of best prevention and management practices*. CAB International, Wallingford, Oxon, United Kingdom.
- Wonham, M. J., M. A. Lewis, and H. J. MacIsaac. 2005. Minimizing invasion risk by reducing propagule pressure: a model for ballast-water exchange. *Frontiers in Ecology and the Environment* **3**:473–478.
- Yen, A. L. 1999. Grassland invertebrates of the western Victorian basalt plains: plant crunchers or forgotten lunches? Pages 57–68 in R. N. Jones, editor. *The Great Plains crash: Proceedings of a conference on the grasslands and grassy woodlands of Victoria (1992)*. Indigenous Flora and Fauna Association and Victorian National Parks Association, Victoria, British Columbia, Canada.
- Zavaleta, E. S. 2002. It's often better to eradicate, but can we eradicate better? Pages 393–404 in C. R. Veitch and M. N. Clout, editors. *Turning the tide: the eradication of invasive species*. Invasive Species Specialist Group, IUCN (World Conservation Union), Gland, Switzerland, and Cambridge, United Kingdom.