



Aquatic animals, cognitive ethology, and ethics: questions about sentience and other troubling issues that lurk in turbid water

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ABSTRACT: In this general, strongly pro-animal, and somewhat utopian and personal essay, I argue that we owe aquatic animals respect and moral consideration just as we owe respect and moral consideration to all other animal beings, regardless of the taxonomic group to which they belong. In many ways it is more difficult to convince some people of our ethical obligations to numerous aquatic animals because we do not identify or empathize with them as we do with animals with whom we are more familiar or to whom we are more closely related, including those species (usually terrestrial) to whom we refer as charismatic megafauna. Many of my examples come from animals that are more well studied but they can be used as models for aquatic animals. I follow Darwinian notions of evolutionary continuity to argue that if we feel pain, then so too do many other animals, including those that live in aquatic environs. Recent scientific data ('science sense') show clearly that many aquatic organisms, much to some people's surprise, likely suffer at our hands and feel their own sorts of pain. Throughout I discuss how cognitive ethology (the study of animal minds) is the unifying science for understanding the subjective, emotional, empathic, and moral lives of animals because it is essential to know what animals do, think, and feel as they go about their daily routines. Lastly, I argue that when we are uncertain if we are inflicting pain due to our incessant, annoying, and frequently unnecessary intrusions into the lives of other animals as we go about 'redecorating nature' (removing animals or moving them from place to place), we should err on the side of the animals and stop engaging in activities that cause pain and suffering.

KEY WORDS: Ethics · Cognitive ethology · Animal emotions · Animal protection · Animal welfare · Animal rights · Sentience · Animal pain · Animal suffering

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HUMANS AND OTHER ANIMALS: JUST WHO DO WE THINK WE ARE?

At that point I was working with squid, and I think squid are the most beautiful animals in the world. And it just began to bother me. I began to have the feeling that nothing I could find out was worth killing another squid.

(Ruth Hubbard, in Holloway 1995, p. 49)

The whale in the sea, like the wolf on land, constituted not only a symbol of wildness but also a fulcrum for projecting attitudes of conquest and utilitarianism and, eventually, more contemporary perceptions of preservation and protection.

(Kellert 1996, p. 112)

Humans are a curious lot, and our intrusions, intentional and inadvertent, have significant impacts on other people, nonhuman animal beings ('animals'), plants, water, the atmosphere, and inanimate landscapes. Often our influence is subtle and long-term. There are many important and difficult issues that demand serious consideration in discussions of the ethics of how human beings interact with animals (Bekoff & Jamieson 1991, 1996, Bekoff 1998). Their complexity is compounded because highly charged subjective personal opinions and passions run high as one might expect. Furthermore, it is often challenging and frustrating for us to confront ourselves when we

see how destructive we are and how many other animal beings suffer and die because of what we do to them, often intentionally. Frequently, we ignore scientific data that show that we are indeed causing enduring pain and suffering. Humans can also be an arrogant lot and it is humbling to ask with humility, rather than with hubris, 'Just who do we think we are?'

Pondering questions about the ethics of our interactions with other animals raises numerous 'big' questions, many of which we would rather ignore because the answers are not all that easy or flattering. These questions include: Who are we in the grand scheme of things? What role does science ('science sense') play in our understanding of the world in which we live? What does it mean to 'know' something? Are other minds really all *that* private and inaccessible so as to make it impossible to know what individuals are feeling? What does the future hold in store if we continue to dismantle the other planet we live on and continue to persecute the other animal beings with whom we are supposed to coexist?

My essay highlights the complexity and multidimensionality of many issues that center on human ethical obligations to other species. I will focus a good deal of attention on the study of animal minds and what is in them (cognitive ethology) and also consider some big and difficult questions that arise when we consider what is called the 'human dimension' and anthropogenic assaults on the lives of other animals. Because of this, interdisciplinary discussion is mandatory and this special issue of *Diseases of Aquatic Organisms* is a much-welcomed and forward-looking addition to the field. It is also good to see that Inter-Research (IR) and publishers of other journals have a stated ethical requirement for papers that are published in these outlets concerning 'the use of animals in research and/or the sampling of endangered species.' Professional societies should set stringent guidelines for ethics, and these standards should not be viewed as unnecessary barriers to research or to curtailing the use of animals for other human activities.

My essay is also meant to be a starting point for discussion of different perspectives. I lay out broad issues and big questions to get the discussion going. Regardless of differences in opinion about what we owe other species, it is important that we all agree that ethics is an essential element in any discussion of human interactions with other animals (Nollman 1999, Bekoff 2000a, 2002b, 2006a,b, Goodall & Bekoff 2002). Scientists are human beings and we all have a point of view, and open discussions in which different perspectives are carefully and respectfully aired are sorely needed in the area of animal protection, which includes different schools of thought, namely 'animal welfare' and 'animal rights.'

ANIMAL RIGHTS AND ANIMAL WELFARE: THE MORAL STATUS OF ANIMALS

The question is not, Can they *reason*? nor Can they *talk*? but, Can they *suffer*?

(Bentham 2005, p. 283; first published 1789)

In current discussions about the moral status of animals, there is an obvious 'progressive' trend for greater protection for wild and captive animals. This is clearly the case for marine mammals (Kellert 1999) and let us hope it will become the case for other aquatic animals and animals in general. In a survey of American's perception of marine mammals most respondents were opposed to commercial whaling, often for ethical reasons. Concern was also expressed for the commercial exploitation of seals, sea otters, walruses, and polar bears. Most Americans also objected to commercial whaling by native peoples or the resumption of killing gray whales. A majority of Alaskans opposed oil and gas development if it injured or killed marine mammals. There was also an unsuccessful effort prior to the reauthorization of the Marine Mammal Protection Act in 1988 to prohibit any invasive research involving marine mammals unless that research would directly benefit the subject of the research.

In recent years, philosophers and scientists have devoted increasing attention to questions about the moral status of animals (Regan 1983, Singer 1990, Francione 2000). Many people support a position called the *rights* view. To say that an animal has a right to have an interest protected means that the animal has a claim, or entitlement, to have that interest protected even if it would benefit us to do otherwise (Francione 2000). Humans have an obligation to honor that claim for other animals (just as they do for humans who cannot protect their own interests). Thus, if a wild dolphin has a right to feed, then humans have an obligation to allow it to do so, and not do anything to interfere with its feeding activities. Likewise, if a dolphin has a right to life, it cannot be used in war games, actual warfare, or other activities in which death is possible.

Animal rights advocates stress that animals' lives are valuable in and of themselves (they have inherent value) and their lives are not valuable because of what they can do for humans (their utility) or because they look or behave like us. Animals are not property or 'things,' but rather they are living organisms worthy of our compassion, respect, friendship, and support. Animals are not 'lesser beings' than or 'not as valuable' as human beings; they are not property that can be abused or dominated. Human benefits are irrelevant for determining how animals should be treated.

Many people believe that the animal rights view and the *animal welfare* view are identical, but they

are not. Animal welfarists typically focus on an individual's usefulness to humans. They practice *utilitarianism*, in which the general rule of thumb is that the right actions are those that maximize utility summed over all those who are affected by the actions. Often welfarists/utilitarians are called 'wise-users.' They believe that while humans should not abuse or exploit animals, as long as we make the animals' lives comfortable, physically and psychologically, we are taking care of them and respecting their welfare. Welfarists are concerned with the quality of animals' lives. But, welfarists do not believe that animals' lives are valuable in and of themselves. Many conservation biologists and environmentalists are utilitarians who are willing to trade-off individuals' lives for the perceived good of higher levels of organization such as populations, species, or ecosystems.

The welfarists' rule of thumb, and it is not a moral rule, is that it is permissible to use animals if the relationship between the costs to the animals and the benefits to the humans is such that the costs are less than the benefits. Welfarists believe that if animals experience comfort, appear happy, experience some of life's pleasures, and are free from prolonged or intense pain, fear, hunger and other unpleasant states, then we are fulfilling our obligations to them. If individuals show normal growth and reproduction, and are free from disease, injury, malnutrition, and other types of pain and suffering, they are doing well. Thus, welfarists argue that using animals in experiments, slaughtering them for human consumption, and using them for treating human disorders (for example, dolphin-assisted therapy programs) are permissible as long as these activities are conducted in a humane way. Welfarists do not want animals to suffer from any unnecessary pain, but they sometimes disagree among themselves about what pain is necessary and what humane care really is. Welfarists agree that the pain and death animals experience is sometimes justified because of the benefits that humans derive. The ends – human benefits – justify the means – the use of animals. Some people argue that 'smart' animals suffer more than do less intelligent beings and therefore it is easier to justify the use of invertebrates, fish, and various rodents rather than dogs, cats, or great apes, for example. However, intelligence and suffering are not necessarily correlated and clever animals do not suffer more than less clever individuals (Bekoff 2006a, 2007). For the utilitarian philosopher, Jeremy Bentham, whose quote I began this section with and whose lead many people follow, it really did not much matter if animals could think or if they were smart. Rather, Bentham was concerned with whether or not animals could suffer.

COGNITIVE ETHOLOGY, SCIENCE SENSE, AND COMMON SENSE: 'MINDING ANIMALS' THAT ARE USUALLY NOT MINDED

Cognitive ethology (the study of animal minds) is the unifying science for understanding the subjective, emotional, empathic, and moral lives of animals because it is essential to know what animals do, think, and feel as they go about their daily routines in the company of their friends and when they are alone (Allen & Bekoff 1997, Bekoff 2002b, 2006a,b,c). It is important to learn why both the similarities and differences in cognitive capacities and sentience between humans and other animals have evolved. The more we come to understand other animals the more we will appreciate them as the amazing beings they are and the more we will come to understand ourselves. We must pay close attention to what animals do in *their* worlds and recognize other animals as a 'way of knowing.' Scientific data, what I call 'science sense', is but one way of knowing, and common sense, intuition, and indigenous knowledge must be given serious consideration (Bekoff 2006a,b).

It is important to blend 'science sense' with common sense. We also need to give serious consideration to the question: What does it mean to 'know' something? I maintain that we *know* that some nonhuman animals feel *something* some of the time, just as do human animals. It is nonsense to claim that we do not know if dogs or pigs or cows or chickens feel pain or have a point of view about whether they like or do not like being exposed to certain treatments. The same goes for the live cats and dogs that are used as shark bait on the island of Réunion (Mott 2005). Who are we kidding? Frankly, I think we're kidding ourselves.

We also are quite good about making predictions about what animals are likely to do and what they prefer and do not prefer when we make inferences about their mental states and feelings (Bekoff 2006a). For example, Wemelsfelder & Lawrence (2001) discovered that even people who have little experience observing animals usually agree with one another on what an animal is most likely feeling. Their intuitions are borne out because their characterizations of animal emotional states predict future behavior quite accurately. In another study, Wemelsfelder and her colleagues (Wemelsfelder et al. 2001) asked 18 naïve observers to independently and in their own words describe the behavioral expression of 20 pigs. They discovered that the observers showed 'significant agreement in their spontaneous assessment ... , which suggests that these assessments were based on commonly perceived and systematically applied criteria.'

Highly accurate prediction offers one of the strongest arguments for the existence of emotions and

feelings in nonhuman species. Predictive ability shows that we often know a lot more than we give ourselves credit for. When we think dogs are having fun, we predict that they will continue playing and seek it out with other individuals if their play partner stops. When we see an elephant moping, e.g. walking slowly and aimlessly, body low to the ground, trunk drooping, and tail down, we are quite right about inferring that it is sad or grieving. The emotional lives of many animals are not hidden or private, but rather public.

Some will say, 'Oh, you're just being anthropomorphic.' I am indeed. Among many researchers there is less resistance to being 'anthropomorphic' because most people – researchers and non-researchers alike – realize that careful, biocentric anthropomorphism that takes the animal's point of view into account (Bekoff 2000b,c) is a very useful heuristic. I have argued repeatedly that we *must* be anthropomorphic because of who we are – anthropoid apes who use a spoken language to communicate our own feelings – and that sanitized reductionistic or mechanistic discussions of animal emotions and sentience are barren and do not help us understand what other animals are feeling or thinking (for more detailed discussion of anthropomorphism, see Bekoff 2006a,b).

WHAT DO ANIMALS WANT?

Cognitive ethology can also help us gain insights into what animals want (Carbone 2004) and it is safe to say that they do not want to suffer, just as we do not want to suffer. Surely a whimpering or playing dog, a lone chimpanzee in a tiny barren and dark cage, an elephant grieving the loss of a friend, or a baby pig having its tail cut off – 'docked' as this horrific and inexcusable procedure is called – or having its teeth ground down on a grindstone, feels something. Recent data show that chronic pain is associated with docking (Bekoff, 2006b). Is this really surprising? Cows can be moody, hold grudges and nurture close friendships, and sheep prefer the faces of familiar individuals (Bekoff 2006b). Is this really surprising? Animals are not unfeeling objects.

Studies of animal preferences are replete with information that shows clearly that individuals make choices that maximize reward and pleasure and minimize punishment and pain (Balcombe 2006, Bekoff 2006a, McMillan & Vance 2004). Animals clearly tell us this in many ways and it is our responsibility to figure out how they communicate their feelings to us. There are data that indicate that reptiles, such as iguanas, try to maximize sensory pleasure (Cabanac 1999, Ramirez & Cabanac 2003). Iguanas choose to stay warm rather than venture out into the cold to get food, whereas

amphibians such as frogs and fish do not show such behavior. Cabanac (1999) postulated that the first mental event to emerge into consciousness was the ability of an individual to experience the sensations of pleasure or displeasure (Ramirez & Cabanac 2003). Based on Cabanac's research, there is evidence that reptiles experience basic emotional states, and that the ability to have an emotional life emerged between amphibians and early reptiles. Now, what about aquatic organisms for which there are few data?

ETHICS, SENTIENCE, AND AQUATIC ANIMALS: DEALING WITH INNUMERABLE NAMELESS AND FACELESS INDIVIDUALS

The emotional lives of fish and other aquatic organisms are difficult to study because the way in which they might communicate their feelings is not readily apparent to humans. Their emotions are not as public as those of mammals, for example. This does not mean, of course, that fish and other aquatic organisms do not experience various emotions including pain and suffering. The faces of many aquatic animals are not very expressive, but many fish and octopuses, for example, change colors in different social contexts, and these changes seem to be related to how they feel about the situation in which they find themselves (Anderson 2000). When octopuses get angry, their pearly white skin turns red. Anderson (2000), who studies octopuses at the Seattle Aquarium, claims that octopuses wear their hearts on their skin for all to see. A red octopus is likely an angry octopus that should be avoided. There are also various chemicals that are carried in water that indicate stress, and fish that are exposed to these chemicals swim away as if they are afraid (Eibl-Eibesfeldt 1975).

For a variety of reasons, writing about the ethics of dealing with many aquatic animals is much more difficult than writing about the terrestrial vertebrates, social carnivores and various birds, with which I am more familiar. Because of a lack of facial expression or expressive eyes, it is more difficult for some people to identify with, and to understand, the social lives, cognitive skills, emotional experiences, and types of suffering and pain that these animals endure in their aquatic environs, habitats that are foreign to humans. With this lack of ability to identify with individuals it becomes more difficult to empathize with them, yet empathy is critical in making decisions about what other individuals are feeling (de Waal 2005, Bekoff 2006a,b) and how we should respond to them. Because of our lack of familiarity with many aquatic animals, we often find ourselves swimming upstream in muddy water when we discuss our ethical obligations to them

because it is easy to ignore what we cannot or do not directly sense or feel. We make certain assumptions and move on from there.

Many people also argue that for species for which there are innumerable members we do not need to be concerned with the well-being of individuals because the species as a whole is not in trouble or endangered. Furthermore, it is uncommon to name the animals they are studying, especially when there are countless individuals present. Working with numerous nameless individuals distances people from the animals they are interacting with (Bekoff 2002b, 2006a). As exemplars they discuss, for example, huge schools of fish, in which there may be millions of nameless individuals. However, just because there are millions of unnamed animals does not mean we do not have a responsibility to treat individuals with respect and to avoid subjecting them to painful experiences. When I mention fish to some colleagues their response is often 'Oh, there are so many of them we don't need to worry about individuals.' It is perfectly okay with them if individuals are traded off for the good of their species.

Another problem is that fish and other aquatic animals find themselves as meals for innumerable humans across cultures, and since it is unlikely that the world will ever become totally or even predominantly vegetarian, aquatic food animals find themselves being taken in massive and unsustainable quantities. We are fishing down the food web, and lower levels of the marine food chain are being used to sustain fish farms. The Food and Agricultural Organization of the United Nations (FAO) noted in February 2006 that their

... most recent global assessment of wild fish stocks found that out of the almost 600 major commercial species groups monitored by the Organization, 52% are fully exploited while 25% are either overexploited (17%), depleted (7%) or recovering from depletion (1%). Twenty percent are moderately exploited, with just three percent ranked as underexploited. Wider use of fishing rights would help address not only overfishing but also the problem of illegal, unregulated and unreported (IUU) fishing as well as conflicts over access to fishing grounds...

(<http://www.fao.org/newsroom/en/news/2006/1000239/index.html>)

There are also problems with non-target species being caught due to fishing activities. For example, in 1990, about 42 million marine mammals and sea birds were caught in drift nets as squid and tuna were being harvested (Fox 1997). About 129 000 Olive Ridley turtles have died over the past 13 yr because they suffocate in the nets of fishing boats not using mandatory turtle-excluder devices. Experts fear that the movement of giant ships and artificial illumination will put the turtles in even deeper trouble in the years ahead. Whales also are non-target victims of fishing nets. In

2003 the World Wildlife Fund reported that nearly 1000 whales, dolphins, and porpoises drowned daily after becoming entangled in fishing nets and other equipment (Verrengia 2003). Annually, more than 300 000 individuals may perish because of fishing activities. And while a global moratorium on commercial whaling has existed since 1986, Japan and Iceland continue to hunt as part of what they call 'scientific programs.' Norway has objected to the moratorium and runs commercial whaling operations.

So, while it may be more difficult to empathize with a turtle, herring, crustacean, or lobster, they are heavily exploited and subjected to much harassment and suffering at the hands of humans. The problems are no less important, nor are our ethical obligations less compelling because these animals are so different from us or from those species to which we readily grant moral standing.

Our feelings for other animals figure heavily into the sorts of treatment we deem permissible or impermissible. We view and treat different aquatic animals differently because of what we assume about them, and this influences how we feel about them. Most people are familiar with the phenomenal cognitive skills and sentience of animals such as cetaceans and other charismatic species, but it is only very recently that solid scientific information has been published about pain in fish (Sneddon 2003, Moccia & Duncan 2004, Chandroo et al. 2004a,b), pain and suffering in cephalopods and decapod crustaceans (see Advocates for Animals 2005), and the impressive social skills, culture, sophisticated learning abilities, long-term memory, cooperative behavior, and recognition skills of fish (Bshary et al. 2002; see also EFSA 2005 for a comprehensive summary of the biology, sentience, emotional lives, and welfare of a wide variety of taxa including aquatic animals and the Nuffield Council on Bioethics (2005) report on the ethics of research involving animals). There is evidence that fish such as rainbow trout experience fear (Moccia & Duncan 2004) and that it is entirely reasonable to assume that many fish are sentient and have the capacity to suffer (Chandroo et al. 2004a,b). Thus, Chandroo et al. (2004a) argue that the concept of animal welfare can legitimately be applied to fish. Octopus have been protected from invasive experimental research in the United Kingdom under The Animals (Scientific Procedures) Act 1986 that was amended in 1993 to include *Octopus vulgaris* (http://www.opsi.gov.uk/si/si1993/Uksi_19932103_en_1.htm). Octopus are protected because of their large brains and highly developed learning skills. This amendment occurred years before a ban on invasive research on chimpanzees was established in the United Kingdom (1997), New Zealand (2000), and The Netherlands (2002).

Another popular food item also figures into the discussion of sentience. While it remains unknown if lobsters feel pain, one of the world's experts on this matter, Jelle Atema, working at the Woods Hole Oceanographic Institute, notes, 'While I do not know for certain, I believe that lobsters may feel pain.' (cited in Corson 2004, p. 278) Further, Atema writes, 'When we kill them for food we should do so quickly. But we should also honor them with thoughtful appreciation for what they have done for us. I believe we should strive for this in all corners of our lives.' It is refreshing to hear this from a practicing scientist.

It is important that we broaden our taxonomic perspective when we consider the pain and suffering that we dole out. We need to 'mind' animals. The phrase 'minding animals' refers to caring for other animal beings, respecting them for who they are, appreciating their own world views, and wondering what and how they feel and why. It also refers to the fact that many animals have very active and thoughtful minds (Bekoff 2002a). We naturally 'mind' terrestrial and aquatic habitats and they and all animals and people are far better off than they would be in the absence of an ethic that blends respect, caring, compassion, humility, generosity, kindness, grace, and love. It is obvious that many animals have a point of view about their place in the world and that the obvious answer to the question 'Do you feel anything?' is 'Yes, I feel a lot.' Numerous aquatic animals typically are not 'minded' and we need to reverse this trend.

ANIMAL PASSIONS AND BEASTLY VIRTUES: ANIMALS WILL ALWAYS HAVE SECRETS BUT THEIR EMOTIONAL EXPERIENCES ARE PUBLIC

My starting point concerning animal emotions and sentience is that many animals have rich and deep emotional lives and are clearly sentient. Their passions are public and not well hidden. It is not a matter of *if* emotions have evolved by *why* they evolved in a wide variety of species. Many animals feel emotions such as joy, happiness, fear, anger, grief, jealousy, resentment, and embarrassment (Bekoff 2000c, 2002b, 2006a,b, de Waal 2005, Panksepp 2005a,b; Wilhelm 2006; see also <http://news.bbc.co.uk/2/hi/science/nature/4401695.stm>). Some might also have a sense of humor or even a sense of awe. Some might even be moral beings who know 'right from 'wrong' (Bekoff 2004, 2006a). Perhaps some animals marvel at their surroundings and just enjoy being out where they live. We really do not know and should keep an open mind about these intriguing possibilities when we cause pain and suffering. It is likely that some people would choose alternative food sources if they knew of the scientific data that showed

that fish and other aquatic organisms likely suffered as do many terrestrial sources of food.

Charles Darwin's idea of evolutionary continuity, in which variations among species are differences in degree rather than differences in kind, is very useful in the study of animal intelligence, animal emotions, and our ethical obligations to other animals. Basically, Darwin argued that there are shades of gray among different species and that the differences are not black and white. So, if humans feel emotions and can suffer, then so too can other animals, but their feelings are not necessarily identical. However, even if they are not identical, this does not mean that they do not exist. It is possible that fish and lobster pain is different from dog, chimpanzee, or human pain, but each individual suffers his or her own pain.

THE IMPORTANCE OF INDIVIDUALS

In addition to broad claims about species differences, we need to focus on individuals because all individuals count. Caution surely is the best road to take when offering generalizations, especially about complex behavior patterns, animal thinking, and animal emotions across species. Large individual differences within species mean that normative claims that 'dolphins do this' or 'cuttlefish do that' discount fascinating individual variations that make the study of animal behavior challenging and exciting. The phrase 'the dolphin' is misleading and does not capture who these amazing aquatic animals are. If we try to draw lines concerning which species experience emotions and experience pain and suffering, we need to be very careful when we do it. Frankly, I think it is a waste of time because new data are constantly adding species to the list of those that do or most likely experience pain and suffering. When new data are collected about animal sentience, species that were previously included before this information was available are rarely removed from the list.

These list of species that suffer and feel pain usually do not include aquatic animals other than those that garner a lot of attention such as sharks, dolphins, and whales. Most descriptions of dolphins and other cetaceans picture them as highly intelligent and sentient, capable of experiencing pleasure and pain, with remarkable social and cognitive skills. Indeed, dolphins and other marine mammals seem to fulfill some criteria of 'personhood' (Herzing & White 1998) in that they are alive, aware of their surroundings, sentient, and may have a sense of self. Why, then, do some people feel comfortable intruding into their worlds if it will cause pain and suffering? Frohoff (1998, p. 84) has poignantly noted: "Currently we are walking a fine line in our rela-

tionship with cetaceans. The same attraction that motivates us to protect them from harm is also what drives us to be close to them, to have them 'within reach.'"

It is because dolphins and other marine mammals are thought to be attractive, harmless, endowed with mystical qualities, or to be of economic value as commodities for show or food, that we seek them out. However, we may bring much harm to them in our efforts to include them in our lives, even in ways that do not involve killing them. For example, 'swim-with-dolphin' and 'petting pool' programs remain very controversial. Such proffered reasons as 'it's fun,' 'aren't the animals cute,' or 'it's a spiritual experience' are insufficient to justify these practices. Much attention has been given to the question of whether or not human encounters with dolphins may have negative effects on them. Human-dolphin interactions may be noisy and stressful. The long-term effects of swim-with-dolphin programs on dolphin behavior and well-being still need to be studied systematically, but there is evidence that the stress associated with these programs may have long-term effects on the dolphins (for further discussion see Iannuzzi & Rowan 1991, Frohoff & Packard 1995, Samuels & Spradlin 1995, Marino & Lilienfeld 1998, Nathanson 1998, Basil & Matthews 2005, and T. G. Frohoff unpubl.).

ARGUING AGAINST SPECIESISM AND FOR EVOLUTIONARY CONTINUITY

I have stressed the degree to which perceived animal/human differences in the brain's organization of feeling and emotion are probably due to artifacts rather than to a real gap between primates (including humans) and other mammalian orders. But that is not to say there is no real difference at all between humans and other animals. There may indeed be a real difference in brain organization of emotion. If so, however, it is quantitative in nature and moderate in degree – not a qualitative or massive difference.

(Berridge 2003, p. 41)

Neural substrates of feeling and emotion are distributed throughout the brain, from front to back, and top to bottom. The same brain structures are implicated in affective reactions for both humans and other animals.

(Berridge 2003, p. 42)

Now, what about *speciesism*? Are we really the only species in which emotions and the ability to suffer have evolved. No. It is not a matter of 'them' versus 'us.' Over the years, a variety of criteria have been used to separate them from us—tool use, language, culture, rationality, consciousness, art, rationality, a sense of self—and all have failed (Bekoff 2006a). Maybe we are the only species that cooks food or in which sadism, hatred, and evil have evolved. There *are* differences but there are also many similarities between humans

and non-human animals. Nonetheless, Dolan (2002) claimed, 'More than any other species, we are the beneficiaries and victims of a wealth of emotional experience.' Professor Dolan cannot know that this statement is true. Indeed, it just might be that other animals experience more vivid emotions than we do. This sort of speciesism – humanocentrism – is what plagues the study of animal emotions. Why are we so special; why are we such deeply feeling animals whereas other animals are not? I find it difficult to accept that we should set the standard against which other animals should be compared. Just look at the state of the world today.

My view of human-animal relations makes me uneasy about claiming that any group of animals is special. Unique yes, special no. I do not think that dolphins or whales are any more special than mice, great tits, goldfish, lobsters, fish, alligators, shrimp, or ants. Just because some animals are sentient, capable of experiencing pain and pleasure, does not necessarily mean that their lives should be valued more than others. Neither is being cute or warm or furry and cuddly a sufficient reason for special consideration and moral standing. Often, people attribute various emotions and the capacity to suffer to charismatic animals with whom they can identify and empathize (Bekoff 2006a). All life is valuable and all life should be revered. *Animals are not resources or property with whom we can do what we please, their lives matter very much, and they should be firmly entrenched in our moral community* (see Jamieson & Regan 1985 with respect to cetaceans).

WHAT SHOULD WE DO? DIFFICULT QUESTIONS WITH NUANCED ANSWERS

Writing about animal ethics is bound to raise hackles and bring one's critics out of the woodwork. Many people are deeply passionate about the imbalance of human-animal interactions—we get a lot and they get very little. While some of my views are considered to be 'radical,' especially by my ivory-tower colleagues, I wonder why it is considered radical to argue that we should let other animals be, and allow them to have their own lives as much as is possible in this human-dominated and anthropocentric world. I am confused, for I am not trying to put my colleagues out of business but rather to ask them to think more deeply about how we impact the lives of other animals.

When many humans interact with nature, they usually wind up redecorating it. Intentionally or not, it is as if humans have an inborn urge to reshape nature, to expand their horizons. We just cannot stop ourselves, and little else does, even the blatant results of our trying to dominate—manage, control—our surround-

ings. We move animals around as we move furniture, we redecorate landscapes with little concern for maintaining biological integrity, and we overfish and take aquatic animals unsustainably. Even during strolls in pristine forests, swims in oceans, or forays in the sky, most humans are detached and alienated from the majesty of their surroundings. They do not seem to love nature deeply.

Because humans have incredible power to dominate animals, they depend on our goodwill and mercy. Animals depend on humans to have their best interests in mind. Human impacts on other animals, intentional and inadvertent, are universal and ubiquitous. We are here, there, and everywhere. A major question in need of serious debate is should we ever interfere in other animals' lives – when might human interference be permissible? Thus, should we let other animals be and not intentionally interfere in their lives? Should we hunt them for food whenever we so wish or should we hunt only when there are no alternative food sources? Should we interfere in other animals' lives when we have spoiled their habitats, when they are sick, provide food when there is not enough food to go around, provide care to young if a parent does not, stop aggressive encounters, stop predators in their tracks, or relocate individuals from one place to another, including zoos, wildlife and marine theme parks, and aquariums? Should human interests always trump those of other animals? If not, then when should the interests of other animals trump our own?

Some of the basic principles that underlie the use and exploitation of aquatic animals and some of the general questions that need to be considered apply to human encounters with just about all other species. Definitive answers to these and other questions are quite elusive, but open discussion can provide guidelines for proactive decision-making. All too often we are left in the position of trying to rectify messy and difficult situations that we have created; proactivity needs to become the *modus operandi* for future actions. For many questions about how animals should be treated by humans there are no 'right' or 'wrong' answers, but rather nuanced decisions that need to take into account the specific situation at hand.

ZOOS, AQUARIUMS, MARINE THEME PARKS, AND THE WELL-BEING OF CAPTIVE ANIMALS

The existence of aquariums and marine theme parks raises many important and difficult ethical questions (Jamieson 1995, Rose & Farinato 1999, Davis 1997, National Research Council). Jamieson argues that zoos teach us a false sense of our place in the natural order. Because what zoos teach us is false and dangerous,

both humans and animals will be better off when they are abolished. Be that as it may, zoos are here to stay at least in the short term, and we need to be sure that we recognize their limitations and strive to offer their residents the best lives possible.

Kellert (1999) found that a majority of Americans objected to the captive display of marine mammals in zoos and aquariums if there are no demonstrated educational and scientific benefits.

There is little evidence that people leave zoos or aquariums with any long-lasting sentiments or knowledge that benefit either the animals they have seen or their wild relatives. Furthermore, few zoos are engaged in conservation efforts for marine mammals or for any other animals. It is important to note that the American Association of Zoos & Aquariums (AZA) itself has concluded in their *own* executive summary (AZA Executive Summary; <http://www.aza.org/ConEd/MIRP/Documents/VisitorLearningExecutiveSummary.pdf>) that 'Little to no systematic research has been conducted on the impact of visits to zoos and aquariums on visitor conservation knowledge, awareness, affect, or behavior.' So much for the AZA's claims that zoos are important for purposes of education and conservation.

Many questions center on how individuals are captured, transported, and kept in various types of captive situations. Animals often are injured and otherwise stressed during capture and transport. Family groups may be broken up and the social structure of populations disrupted. The effects of changing the social structure of wild populations are little known. Well-intentioned people often argue that the lives of captive animals are of higher quality than those of wild relatives, but available data for marine mammals suggest that this claim is not well supported (Rose & Farinato 1999). From an ethical perspective, one must consider whether or not this claim is even relevant, for keeping animals in captivity radically alters numerous behavior patterns that have evolved over millennia. Predation, starvation, and disease are part of what it is to be wild. Is a longer unnatural life in captivity better than a shorter natural life in the wild?

The benefits of keeping marine mammals and other aquatic animals in captivity, to the animals themselves, are largely unknown. Because the social and physical environments of marine mammals are virtually impossible to replicate in captivity, ethical questions arise when these animals are maintained in unnatural environments. There can be little doubt that the quality of life is compromised, even though some zoo supporters claim that their residents get free meals, protection from predators, free health care, and a safe place to sleep. In captivity, evolved patterns of foraging, care giving, and migrating are lost as are natural patterns of social organization (group size and composition). In

captivity, for practical reasons, group sizes may be much smaller than those observed in wild relatives. Stereotyped behaviors often result from conditions of captivity, as do self-mutilation and unusually high levels of aggression. Furthermore, individuals often cannot escape from the glaring eye of the public and they cannot choose when and where to rest.

Many ethical concerns are also raised because first and foremost, zoos are businesses and their bottom line centers on money (Davis 1997). For example, it costs an enormous amount of money to bring marine mammals into captivity and to keep them there. It has been suggested that the money used to capture, transport, and keep animals in captivity would be better used to do research in the wild. Also, much money is spent on public relations and not on the animals themselves. Some feel that the images of nature that are represented to the public are a manufactured corporate point of view that centers more on what the public wants than what is good for the animals. Witness the existence of numerous 'Flippers' (the prototypical dolphin) and 'Shamus' (the model killer whale), whose lives do not resemble even closely the lives of free-living conspecifics or relatives other than that they all live in water.

Similar questions are raised when considering research on captive animals. Certainly, information may be gathered about various aspects of their lives (for example, maternal behavior, self-recognition, social behavior, communication, and cognitive capacities). However, research on captive animals is increasingly being scrutinized by some researchers, philosophers, many universities, and various funding agencies. Some relevant questions include: is it ever permissible to keep individuals in captivity regardless of their utility; is the knowledge that is gained by studying captive individuals justified by keeping them in cages or tanks; and could more reliable data be collected under more natural conditions? We still know very little about the life histories of most aquatic animals. For many people it is the benefits that the captive individuals and other members of their (or other) species might accrue that are central, not the benefits that humans might gain. But rarely are the results of research used to benefit the animals other than in learning about medical treatments and husbandry to make their lives in captivity better. Rarely do wild individuals benefit from work done on captive relatives.

THE FUTURE: BEING COMPASSIONATELY PROACTIVE

Kellert's (1999) study of American perceptions of marine mammals and their management shows clearly that most people support the various goals of the

United States' Marine Mammal Protection Act. Most are willing to 'render significant sacrifices to sustain and enhance marine mammal populations and species ... These findings clearly indicate that marine mammals possess considerable aesthetic, scientific, and moral support among the great majority of Americans today.' (Kellert 1999, p iv-v)

As a scientist, I am often criticized for being anti-science. This is not so. It is in the best traditions of science to ask questions about ethics; it is not anti-science to question what we do when we interact with other animals. Ethics can enrich our views of other animals in their own worlds and in our different worlds, and help us to see that their lives are worthy of respect, admiration, and appreciation. Indeed, it is out of respect, admiration, and appreciation that many humans seek out the company of whales, dolphins, polar bears, and aquatic animals. The study of ethics can also broaden the range of possible ways in which we interact with other animals without compromising their lives. Ethical discussion can help us to see alternatives to past actions that have disrespected other animals and, in the end, have not served us or other animals well. In this way, the study of ethics is enriching to other animals and to ourselves in that we may come to consider new possibilities for how we interact with other animals. If we think ethical considerations are stifling and create unnecessary hurdles over which we must jump in order to get done what we want to get done, then we will lose rich opportunities to learn more about other animals and also ourselves. Our greatest discoveries come when our ethical relationships with other animals are respectful and not exploitive.

Many ethical issues are extremely difficult to reconcile and generate highly charged and deeply emotional and passionate responses. Achieving a win-win situation for animals and humans will be very difficult. However, it is clear that the increasingly detailed attention being given to various sorts of human-animal interactions is showing that there are innumerable negative effects on the lives of the animals. While many negative influences have been anticipated or are not surprising, the severity of human influences has not been fully appreciated. We must be careful not to love these animals to their (or our) deaths. Humans are indeed dangerous to innumerable aquatic animals.

Allowing human interests always to trump the interests of other animals is not the best strategy if we are to solve the numerous and complex problems at hand. We need to learn as much as we can about the lives of wild animals. Our ethical obligations also require us to learn about the ways in which we influence animals' lives when we study them in the wild and in captivity, and what effects captivity has on them. As we learn

more about how we influence other animals, we will be able to adopt proactive, rather than reactive, strategies.

The fragility of the natural order requires that people work harmoniously so as not to destroy nature's wholeness, goodness, and generosity. The separation of 'us' (humans) from 'them' (other animals) engenders a false dichotomy, the result of which is a distancing that erodes, rather than enriches, the numerous possible relationships that can develop among all animal life.

Public education is critical. To disseminate information about what is called the 'human dimension,' administrators of zoos, wildlife theme parks, aquariums, and areas where animals roam freely should inform visitors of how they may influence the behavior of animals they want to see. Tourism companies, nature clubs and societies, and schools can do the same. By treading lightly humans can enjoy the company of other animals without making them pay for our interest in their fascinating lives. Our curiosity about other animals need not harm them.

Numerous aquatic animals are closely linked to the wholeness of many ecosystems, and how they fare is tightly associated with the integrity of communities and ecosystems. By paying close attention to what we do to them, why we do what we do, and where and when we do it, we can help maintain the health of individuals, species, populations, and ecosystems.

TOWARD A DEEP ETHOLOGY: AQUATIC ANIMALS ARE MORE THAN STREAMS OF PROTEIN

We need a compassionate ethic of caring and sharing our planet. Sensitivity and humility are essential components of our guiding ethic. Expanding our circle of respect and understanding can help bring us all together. We are other animals' guardians and we owe them unconditional compassion, respect, support, and love. We may have control and dominion over other animals, but this does not mean that we have to exploit and dominate them.

My views on animal use are indeed restrictive. We are not nature's keepers if this means that we 'keep nature' by dominating other animals using a narrow anthropocentric agenda in which other animals are objectified – referred to by numbers and not by names, transformed into points on a graph – and their world views discounted. This means that fish farms and capture fisheries (and slaughterhouses for terrestrial food), for example, are not acceptable practices for producing food. There is little doubt that fish suffer (e.g. Lambooij et al. 2004, Moccia & Duncan 2004, Chandroo et al. 2004a,b).

The ethical problems with fish farms and aquaculture go beyond the harming of individuals. There also are serious environmental concerns (McCarthy 2002, Midkiff 2004). For example, farm-raised salmon have escaped from their pens and this has led to crossbreeding and competition with native Pacific salmon. There are dead zones under pens, as feces, excess food, and harmful additives accumulate on the sea floor. The state of Maine has banned salmon pens from its offshore waters and Alaska has banned salmon pens from its waters to protect native stocks and the Alaska fishing industry (Midkiff 2004).

I know there is a real world out there and that the world is not going to become vegetarian any time soon, if ever. However, if we carefully scrutinize what we do we surely can reduce the intentional harm we cause billions of individuals as they become our meals. Fish and other aquatic animals are more than streams of protein.

So, where to from here? Our starting point should be that we will not intrude on other animals' lives unless we can show that we have a right to override this maxim and that our actions are in the best interests of the animals irrespective of our desires. When unsure about how we influence the lives of other animals, we should give them the benefit of the doubt and err on the side of the animals. It is better to be safe than sorry.

First and foremost in any deliberations about other animals must be deep concern and respect for their lives and the worlds within which they live, i.e. respect for who they are in their worlds, and not respect motivated by who we want them to be in our anthropocentric scheme of things. As Taylor (1986, p. 313) notes, a switch away from anthropocentrism to biocentrism, in which human superiority comes under critical scrutiny, 'may require a profound moral reorientation.' That is just fine. Can we really believe that we are the only species with feelings, beliefs, desires, goals, expectations, the ability to think, the ability to think about things, the ability to feel pain, or the capacity to suffer?

Surprises are always forthcoming concerning the cognitive skills, emotional lives, and sentience of non-human animals, and it is essential that people who write about animal issues be cognizant of these findings. I do not see how any coherent thoughts about moral and ethical aspects of animal use could be put forth without using biological/evolutionary, ethological, and philosophical information. Ethologists must read philosophy and philosophers must not only read ethology but also watch animals. And those who use animals would do well to read about ethics and look for more humane alternatives to the practices in which they engage.

I believe that a deep reflective ethology is needed to make people more aware of what they do to non-

humans and to make them aware of their moral and ethical obligations to animals. I use the term deep reflective ethology to convey some of the same general ideas that underlie the 'deep ecology' movement (Tobias 1985), which asks people to recognize that not only are they an integral part of nature but also that they have unique responsibilities to nature.

Ethics, compassion, humility, respect, coexistence, and sustainability are among the principles that should guide us when we interact with other animals. In most cases there are more humane alternatives than the methods that we use to intrude into animals' lives. We must step lightly into the lives of animals and into their homes. We must not leave destructive footprints of any size.

We can *always* do better in our interactions with other animal beings. *Always*.

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