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A Primer on Anti-Angling Philosophy and Its Relevance for Recreational Fisheries in Urbanized Societies

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A Primer on Anti-Angling Philosophy and Its Relevance for Recreational Fisheries in Urbanized Societies

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ABSTRACT: *In some industrialized countries, recreational fishing has come under moral pressure. To understand potential ramifications, we first describe three dominant philosophies of human–animal interactions (i.e., animal welfare, animal liberation, and animal rights). We contend that, as long as fishing and handling practices are as fish friendly as possible, most animal welfare perspectives can easily accommodate recreational fishing in its present form. In contrast, animal liberation and animal rights philosophies tend to reject recreational fishing. On the hypothesis that economic development is conducive to the emergence of pro-animal values in the wider public, it can be assumed that anti-angling sentiments resonating strongly with animal liberation/rights thinking might increase. Examples from opinion surveys covering a range of countries show that about 25% of people already morally question recreational fishing for sport. Coupled with the supposed shift in pro-animal values, this public sentiment might foster the implementation of regulations similar to those already seen in some European countries, which are imposed to constrain popular recreational angling practices such as the use of live baitfish or the release of legally harvestable fish. Increasing anti-angling sentiments bolstered with arguments from animal liberation and rights can thus have far-reaching consequences for recreational fisheries.*

El abecé de la filosofía de la no-pesca con línea y su relevancia para la pesca recreativa en sociedades urbanizadas

RESUMEN: *en algunos paises industrializados, la pesca recreativa se ha topado con presiones de índole moral. Para comprender las potenciales implicaciones de esto, en el presente trabajo se describen tres filosofías dominantes acerca de la interacción animal-humano (i.e. bienestar animal, liberación animal y derechos de los animales). Sostenemos que a medida que las prácticas de pesca y manipulación de organismos sean tan amigables hacia los peces como sea posible, la mayoría de las posturas con respecto al bienestar de los animales pueden fácilmente dar cabida a la pesca recreativa tal y como se lleva a cabo hasta ahora. Por el contrario, las filosofías de liberación animal y de los derechos de los animales, tienden a rechazar la pesca recreativa. Bajo la hipótesis de que el desarrollo económico conlleva la generación de valores en pro de los animales por parte del público, puede asumirse que los sentimientos que van en contra de la pesca con línea, típicos del pensamiento de liberación/derechos animales, pudieran incrementarse. Se exponen ejemplos basados en sondeos de opinión aplicados en diversos pueblos, que muestran que cerca del 25% de la gente ya se cuestiona sobre la moralidad de la pesca recreativa como actividad deportiva. En paralelo al supuesto cambio hacia los valores en pro de los animales, este sentimiento público pudiera fomentar la implementación de regulaciones similares a las observadas en algunos lugares de Europa; regulaciones que se imponen para limitar las prácticas populares de pesca recreativa tales como el uso de carnada viva o la liberación de peces legalmente pescables. Por lo tanto, el aumento en la expresión de los sentimientos en contra de la pesca con línea, reforzados con los argumentos relacionados a la liberación y los derechos de los animales, pueden tener consecuencias muy importantes para las pesquerías recreativas.*

INTRODUCTION

In the last two decades there has been a distinct increase in the moral debate concerning recreational fishing (reviewed by Arlinghaus 2008; Arlinghaus and Schwab 2011). The two most frequently voiced objections to recreational fishing are that (1) the pursuit of fish is not a life-supporting necessity for the angler in the developed world; and (2) the angler causes pain and suffering to fish as sentient beings. As to the first issue, almost all human activities can be questioned on the basis of necessity, because necessity is mainly about values. Yet for this very reason a solution to this question is outside the scope of natural science. In contrast, the issue of pain and suffering in fish is amenable to scientific analysis (Arlinghaus et al. 2009). There has recently been a spate of high-profile papers suggesting that

nociception—coupled with advanced levels of consciousness and therefore pain perception and the ability to suffer in a mammalian sense—is indeed a plausible concept in fish (Chandroo et al. 2004; Huntingford et al. 2006; Sneddon 2006, 2009; Braithwaite 2010). Such science proves useful for those advocacy groups who assure the public that "fish have feelings, too" (one of the slogans of People for the Ethical Treatment of Animals [PETA]). If one accepts the assumption that fish can feel pain consciously, or are capable of suffering, and if one believes that avoidance of suffering is a key ethical goal, then the practice of recreational fishing may be perceived as cruel (de Leeuw 1996; Balon 2000; Olsen 2003). Recreational fishing becomes morally even more unacceptable if a second ethical perspective is added: that one shall not intentionally play with food for unjustified reasons (the necessity argument; Aas et al. 2002). If these two moral aspects merge, the ethical pressure on recreational fishing is strong enough to justify constraints on popular practices or even the banning of some of them (Arlinghaus et al. 2009).

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Society defines its moral norms depending on the contemporary zeitgeist, which usually changes over time. It seems that in many contemporary societies, wildlife- and animal-related social values and norms are in flux, moving toward perspectives that are less supportive of the toleration of recreational fishing and hunting or other human uses of animals (e.g., research with animals) in their traditional forms. Indeed, some industrialized societies have already experienced bans on popular recreational fishing practices such as tournament fishing involving total catch and release (Meinelt et al. 2008), use of live baitfish (Berg and Rösch 1998), or voluntary catch-and-release fishing of legally harvestable fish (Arlinghaus 2007), based on the argument that the degree of pain and suffering caused to the fish is not justified if it is only captured for the angler's pleasure. But these developments may be perceived by those who object to recreational angling on moral grounds as only intermediate steps. Indeed, abolition of recreational fishing might be the ultimate goal, as has been suggested by the agendas of certain established European political parties or advocacy groups (e.g., PETA). These views enjoy enormous political support in some countries, and animal protection concerns related to recreational fishing have thus entered political agenda in some regions of the urbanized world.

Moral censure of recreational fishing usually evokes a defensive reaction from those who happen to fish recreationally or depend on recreational fishing for survival (e.g., recreational fishing industry). Arguments may be put forward on either a general or a very specific level. On a general level, one could plausibly argue that recreational fishing, like American football, cruising with pleasure cars, cross-country running, parachuting, and countless other leisure activities in affluent societies, is unrelated to human survival needs; yet such practices produce social and economic benefits of considerable magnitude, worth enough in themselves to justify the activity. In addition, recreational fishing, like recreational hunting, is of social worth inasmuch as it also produces ecological benefits by protecting and enhancing wild fish stocks (LaChat 1996; Rose 2007). Such perspectives, however, cannot entirely discount the issue of intentional infliction of pain and suffering on fish; if this is thought as highly undesirable and the benefits of recreational fishing are not considered to be important enough, the jury might still vote against recreational fishing.

On a specific level, the reaction to the threat of constraining recreational fishing on moral grounds may be to question the validity of the arguments voiced by those with radical anti-angling viewpoints (Herzog 1993; LaChat 1996). One could claim that fish lack the capacity for pain and suffering (Rose 2002, 2003, 2007; Newby and Stevens 2008a, 2008b) and argue that if there is no ability to experience pain or to suffer, then there cannot be cruelty; this dispenses with cruelty as a moral concern. But one needs to consider that there is a strong case made for the view that fish feel pain and that this view enjoys considerable support in parts of the scientific community (e.g., Braithwaite 2010). Even though the evidence is still inconclusive and indeed questioned by some (e.g., Rose 2007), one could always bring forward the "benefit-of-the-doubt" argument, which holds that in the face of scientific uncertainty one should treat fish as if they would experience pain in a similar way to humans (Sneddon 2006). The alternative perspective is that, given the fact that the "fish feel pain" hypothesis is by no means universally accepted (e.g., Rose 2007; Arlinghaus et al. 2009), restrictions on fishing practices based on acceptance of it seem unjustified and questionable.

A comprehensive analysis of the background, history, and future of opposition to recreational angling will help to understand the underlying debate and foresee potential consequences for recreational fishing. We attempt to present such an analysis in the present article by reviewing the emerging hypothesis on increasing anti-angling sentiment in postindustrialized, highly urbanized countries and by putting this hypothesis into the context of philosophical standpoints related to human use of animals. We then review the opinions of the public in certain countries on the morality of recreational fishing and give examples of how pro-animal social norms may influence the acceptability of certain recreational fishery practices. We end by outlining some management and policy implications.

THE HISTORICAL AND ACADEMIC PHILOSOPHICAL CONTEXT

The first fishing hooks date back c. 50,000 years, whereas the systematic questioning of animal use, which in more recent years has come to include concerns about fishing practices (e.g., Webster 2005; Arlinghaus et al. 2009), is hardly 50 years old (Fraser 2008). Today we can distinguish three different lines of philosophical argument in the context of human use of animals, each with different implications for recreational fishing. A brief review of these three standpoints follows to provide the needed context (see Arlinghaus, Cooke, Lyman, et al. [2007]; Arlinghaus, Cooke, Schwab, et al. [2007]; Arlinghaus et al. [2009]; and Arlinghaus and Schwab [2011] for details).

Animal welfare in philosophical usage holds that the use

of animals is morally acceptable in principle. This perspective, however, also entails the moral obligation to care for animals, to prevent cruelty, to reduce suffering, and to look critically at how animals are used. Animal welfare ideas originate from a range of philosophical backgrounds; this makes it challenging to demarcate their origin clearly. Irrespective of the origin, all who subscribe to an animal welfare view agree that animals may be used for human ends, but this always entails an obligation to attend to the well-being of animals (Table 1).With regard to recreational fishing, this means that almost all practices are considered acceptable as long as the fisher cares for the welfare of the fish in the capture process; for example, using suitable handling or holding methods when fish are captured and released or when they are held prior to consumption or to facilitate a rapid kill (Cooke and Sneddon 2007; Arlinghaus et al. 2009). This line of argument resonates strongly with common sense, but we should be aware that the phrase "animal welfare" is often used loosely and may also entail ideas that, strictly speaking, belong in the philosophical origin of animal liberation or animal rights (as described in more detail next).

Animal liberation, the philosophy and movement "invented" by Peter Singer (1990), offers a radically different perspective (Table 1; Arlinghaus and Schwab 2011). It rests on two pillars: suffering and speciesism. According to Singer, the capacity to suffer means that a being has interests, and equal suffering signifies equal interests, as well as equal moral consideration. The second pillar, speciesism, "is a prejudice or attitude of bias in favour of the interests of members of one's own species and against those of members of other species" (Singer 1990, p. 6). Like racism and sexism, speciesism must be "condemned" (Singer 1990, p. 6). Thus, moral choices must not be based on species membership.

TABLE 1. Implications of animal welfare, animal liberation, and animal rights concepts for the socially accepted interaction of humans with fish. Animal liberation information is derived from Singer (1990) and animal rights from Regan (1983); animal welfare information is taken from several different sources. What is shown here is a pragmatic animal welfare approach based on the idea that recreational fishing is a legitimate human activity in principle (Arlinghaus et al. 2009); animal welfare is nevertheless important in terms of shaping how recreational fishing is conducted to minimize potential welfare impairments. (Modified from Arlinghaus, Cooke, Lyman, et al. 2007; Arlinghaus et al. 2009.) Footnotes highlight some areas for improved fish welfare.

	Animal welfare	Animal liberation	Animal rights
Fish have intrinsic value	Unclear	No	Yes
Fish have rights	No	No	Yes
Duties to fish	Yes	Yes	Yes
Catch, kill, and eat	Yes[a]	No	No
Regulatory catch and release	Yes[b]	No	No
Voluntary catch and release	Yes[b]	No	No
Fisheries management	Yes[c]	No	No
Use of animals (food, work, manufacture, pleasure, science)	Yes[d]	No	No

[a]Rapid killing process is advisable (Davie and Kopf 2006).
[b]Preferred action is adoption of practices that reduce welfare impairments; for example, through appropriate choice of gear and handling (Arlinghaus, Cooke, Lyman, et al. 2007; Cooke and Sneddon 2007; Arlinghaus 2008; European Inland Fishery Advisory Commission 2008).
[c]Best practice would demand promoting methods with the least possible welfare impact; e.g. in the context of stocking (European Inland Fisheries Advisory Commission 2008).
[d]For example, in science, following national research protocols for animal care is demanded.

Singer believes that fish feel pain (Singer 2010) and he takes a dim view of anglers, as this quotation shows: "Surely it is only because fish do not yelp or whimper in a way that we can hear that otherwise decent people can think it a pleasant way of spending an afternoon to sit by the water dangling a hook while previously caught fish die slowly beside them" (Singer 1990, p. 172). Animal liberation is in the philosophical tradition of utilitarianism. Utilitarianism focuses on the consequences of actions. An action is right when it brings about more pleasure than pain—there is thus no right or wrong, good or bad, as such; it all depends on the benefit–cost trade-off in terms of pleasure versus pain. Therefore, recreational angling might be perceived as good or bad depending on how one judges the benefits it provides (mainly pleasure to humans) versus the costs it produces (mainly pain for fish). In principle this leaves a back door open to allow for recreational fishing. In practice, however, it certainly has no place as far as ardent anti-anglers—inspired by Singer's philosophy—or by Singer himself—are concerned.

For some scientists in the field of fish and fisheries, pain and suffering of fish are central ethical concerns. Their reasons for focusing on pain and suffering might be completely different from those of Singer; the practical consequences, however, can be very similar (Arlinghaus, Cooke, Lyman, et al. 2007; Arlinghaus et al. 2009). For example, after examining the evidence for pain and suffering in fish and concluding that fish probably can experience these mental states, the German animal behavior scientist Würbel (2007) stated that whether angling as an activity conducted for pleasure is to be further tolerated must be renegotiated. The Brazilian fish biologist Volpato (2009) expressed the resulting conclusion more explicitly by saying that "the imposition of discomfort in activities solely for human pleasure (e.g., recreational fishing and aquarism) is unacceptable, and Webster (2005) judged that a catch-and-release event would traumatize an individual fish to such a degree that for fish "welfare" reasons it would be better to kill the fish rather than to preserve its life by releasing it.

Peter Singer is hailed as "the father of animal rights," but although he frequently uses the term, he does not believe in rights. Singer understands the notion of rights merely as a "convenient political shorthand" in "the era of thirty-second TV news clips" (Singer 1990, p. 8). In colloquial use, however, "animal rights" denotes both animal liberation and animal rights, and we also use the term here to cover both meanings, except where we talk specifically about one or the other, because the consequences of animal liberation and animal rights philosophies tend to be identical for recreational fisheries practice despite the fact that they have different philosophical origins (Table 1).

The most influential animal rights philosopher is Tom Regan. In his groundbreaking book *The Case for Animal Rights,* Regan (1983) distinguishes between moral agents and moral patients. The moral agent is the normal human adult who is

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able to make informed, rational moral decisions. A moral patient, on the other hand, does not possess the necessary mental faculties for moral decisions. Human (e.g., baby) and animal moral patients are incapable of right or wrong actions; they can only be at the receiving end of moral decisions (Regan 1983). A common quality of moral agents and patients is that they are "subjects-of-a-life," and this quality entitles them to the right not to be harmed (Regan 1983). The subject-of-a-life criterion is fulfilled when a number of individual requirements are met, such as the ability to develop and express higher-order mental states (e.g., beliefs, desires, perception, memory, a sense of the future, emotional life, ability to initiate action, psychophysical identity over time) and to experience individual welfare (Regan 1983). In recent years some of these "higher-order" mental states have also been attributed (at least casually) to fish by some contemporary fish behavioral biologists and fish neurobiologists (e.g., Chandroo et al. 2004; Huntingford et al. 2006; Sneddon 2006, 2009; Braithwaite 2010). Of course, scientists have to use available words and concepts to talk about the cognitive abilities of fish, so the overlapping of words on the part of some contemporary fish biologists with the subject-of-a-life criterion is probably coincidental. Rose (2007) and Arlinghaus et al. (2009) have nevertheless argued against the uncritical attribution of concepts from human psychology to fish because many concepts lack construct validity and are not proven. Whether or not these concepts are valid is not too important to Regan in the context of judging the morality of recreational fishing: "Even assuming birds and fish are not subjects-of-a-life, to allow their recreational or economic exploitation is to encourage the formation of habits and practices that lead to the violation of the rights of animals who are subjects-of-a-life" (Regan 1983, p. 417). Any recreational use of fish is therefore out of the question for Regan-style animal rights philosophers (Table 1), not because of the ability of fish to feel pain or suffer per se but because of the violation of their rights.

Because of their uncompromising consequences for recreational fishing, both animal liberations in the spirit of Singer and animal rights in the nature of Regan can be classified as anti-angling perspectives (Arlinghaus 2008; Arlinghaus and Schwab 2011). Animal liberation and animal rights ideas have enjoyed enormous popularity in the last two decades. Both Singer and Regan are contemporary philosophers whose writings have influenced hundreds of other writers who promote pro-animal ideas in universities and up to the highest political levels: national governments, bioethics committees, international organizations, and commissions advising policy makers on pertinent issues involving human–animal interaction. In this way, academic philosophy sooner or later helps to shape the regulations concerning the use of animals; further evidence for this assertion will be seen below.

ARE THE MORAL NORMS RELATED TO THE USE OF WILDLIFE AND FISH CHANGING ACROSS THE GLOBE?

How are society's views on animal use changing over time, and how much is the change influenced by elements of one or more of the three philosophies outlined above? In past centuries, concern for animal well-being was confined to literate and political elites, not least because the individuals in question were socially and economically in a position to be involved in such matters. In the last 50 years concern for animals found a broader base because it became part of the environmental and social reform movement (Fraser 2008) and because more and more people could afford to be concerned. We think that it is no coincidence that concern for the welfare of animals is thriving in the most developed and affluent Western societies (initially in European countries such as Germany, the UK, Switzerland, Norway, The Netherlands, and, more recently, in the United States). To dismiss affluence as a decisive factor in the degree and intensity of public concern for animals, including fish, as Lawrence (2008) seems to suggest, would mean to ignore a substantial part of past and present reality. Affluence is certainly not the only precondition, but it is an important one when considering how animal (including fish) welfare is perceived by the wider public. In light of these developments, one can predict that in affluent societies moral pressure on recreational anglers and hunters will increase and social acceptance of these activities will probably decrease.

To investigate scientifically whether—and in what ways—views on wildlife (including fish) may be changing over time with urbanization and industrialization, Manfredo and Teel (Teel et al. 2005; Manfredo 2008; Manfredo et al. 2009) have introduced a social–psychological classification scheme based on the concept of "wildlife value orientations." This framework consists of cognitive networks of basic beliefs that are organized around values and provide contextual meaning to those values in relation to wildlife. Wildlife value orientations are assumed to play an important role in explaining individual variation in wildlife-related behavior and attitudes. A survey-based application of this concept in the U.S. public identified two main orientations: (1) a utilitarian wildlife value orientation (recently relabeled "domination"; Manfredo et al. 2009), representing a view that wildlife should be used and managed primarily for human benefit; and (2) a mutualism wildlife value orientation, viewing wildlife as capable of relationships of trust with humans, as if part of an extended family, and as deserving of rights and caring. (Note that the term "utilitarian" in this context is not to be confused with the philosophical notion of utilitarianism as used by Singer [1990]; see previous section.) Those with a strong mutualist orientation are more likely to engage in welfare-enhancing behaviors toward fish and wildlife and less likely to support actions and practices resulting in death or harm to fish and wildlife (Manfredo 2008). Mutualists are also more likely to view fish and wildlife in human terms, with human personalities and characteristics—a person-related trait also known as "anthropomorphism." In contrast, those with a strong utilitarian/domination orientation are more likely to prioritize the human well-being over fish and wildlife in their attitudes and behaviors (Manfredo 2008). They are also more likely to find justification for treatment of fish and wildlife in utilitarian terms and to rate actions that result in death or harm to fish and wildlife as acceptable. Wildlife value orientations have proven effective in explaining considerable variation in

attitudes toward hunting and fishing, as well as actual participation in these activities (Fulton et al. 1996; Teel et al. 2005; C. Riepe and R. Arlinghaus unpublished data). Those with a utilitarian orientation are more supportive and more likely to engage in hunting and fishing than those with a mutualist view of the wildlife resource. Value orientations have also been shown to be important predictors of anglers' normative beliefs about stewardship behavior (Bruskotter and Fulton 2008).

Because wildlife value orientations have been shown to help explain the attitudes and behaviors of humans, their impetus for the social acceptability of recreational fishing is worth examining in light of the supposed shifts in values in industrialized societies. Manfredo (2008) and Manfredo et al. (2009) have argued that an intergenerational shift from utilitarian to mutualist wildlife value orientations is already occurring in the United States, and probably also in other modern societies, in response to societal changes that have impacted the living conditions in which today's generation is being brought up. This shift is tied to an increase in economic productivity, which has lessened the importance of subsistence needs and elevated the emphasis on self-realization. This changing need structure in affluent societies, influenced by the human's intrinsic tendency to anthropomorphize—that is, to ascribe human traits to wildlife, including fish—sees wildlife emerging no longer as simply a food source or threat to human safety but as a potential source of companionship and as part of one's social group. In addition, urbanization has created a context in which people interact less directly with wildlife (and are therefore less likely to be exposed to dangerous encounter situations or to engage in hunting or fishing), which results in an increasing alienation of large parts of society from direct contact with nature and animals (Miller 2005). Therefore, learning about wildlife occurs largely through media and other social mechanisms rather than through direct experience. Together with the spread of computer games and mass communication these developments have resulted in a loss of interest in direct interaction with nature and wildlife ("videophilia"; Pergams and Zaradic 2006).

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Societal-level changes in modern life have thus provided the impetus for a rise in mutualist views toward wildlife and contributed to a social environment much less tolerant of traditional activities of consumptive interaction between humans and wildlife, such as recreational fishing and hunting. In support of this hypothesis, Manfredo et al. (2009) conducted an analysis using data from a 19-state study in the United States revealing a strong relationship between state-level modernization variables (i.e., income, education, urbanization) and wildlife value orientations. An example of their findings is shown in Figure 1, which depicts a strong linear relationship between the percentage of mutualists in a state and the number of people residing in urban areas. Though longitudinal data will be needed to explore this issue more fully, the findings are consistent with the notion that urbanization and other modernization factors may be contributing to a societal-level shift in human value orientations regarding wildlife and fish in the United States and possibly elsewhere in postindustrialized countries (Manfredo et al. 2003, 2009). Given the documented relationship between wildlife value orientations and wildlife-related attitudes and behaviors, a continuation of past trends could result in a sustained increase in anti-angling and anti-hunting attitudes in the United States, because mutualists share values and attitudes similar to animal liberation and animal rights philosophies, largely opposing the extractive use of wildlife and fish (Manfredo et al. 2003; see also Table 1 and previous section). There is some evidence that this rise in opposition to traditional forms of recreation has already occurred and is influencing the public's views and consequent actions against hunting and fishing in the United States. For example, Minnis (1998) reported that prior to 1972 there was just one anti-hunting/anti-trapping ballot initiative in the United States. In the 1990s, however, 14 initiatives were brought forward, of which 9 passed. In addition, Organ and Fritzell (2000) found that an increasing number of students with anti-hunting attitudes have been attracted to university courses in wildlife management in recent years. Also consistent with the value orientation shift discussed here in the context of recreational fishing, Kellert (1976), in a review of American newspaper accounts between 1900 and 1976, documented a decrease in utilitarian attitudes toward wildlife. This trend is also reflected in declining numbers of people engaged in consumptive outdoor recreational activities such as hunting and recreational fishing in much of North America (Gray et al. 2003; U.S. Fish and Wildlife Service 2006). These changes in societal thought and behavior, should they continue, will probably have an impact on future social acceptance of recreational fishing (or some of its practices, such as tournament fishing) in the United States and other modern countries.

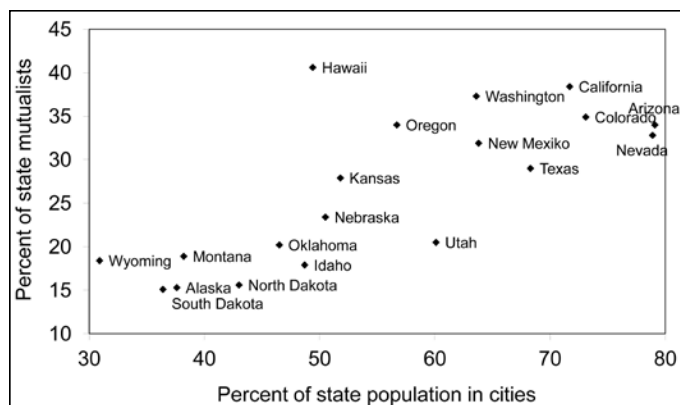

Figure 1. Percentage mutualists by urbanization across U.S. states (modified from Teel et al. 2005).

HOW DO CONTEMPORARY SOCIETIES VIEW THE USE OF FISH COMPARED TO THE USE OF OTHER ANIMALS?

Though the philosophies of animal welfare, liberation, and rights may be a useful way of classifying philosophical positions about animal use (Table 1), they may not distinguish the public's values as neatly as we suppose. Rather, individual viewpoints regarding the treatment of animals, including fish, fall somewhere between animal welfare and animal rights positions (Signal and Taylor 2006; Hutchins 2007), whereas elements of the animal liberation position seem to merge conceptually into the rights ideology. For example, when members of the animal

rights community assessed themselves on a rating scale as adhering either to a typical animal welfare position or to a more radical animal rights position, Signal and Taylor (2006) found that those tending toward the rights position held significantly stronger protectionist attitudes toward the treatment of animals than those on the welfare side of the continuum. In addition, all members of the animal rights community taken together, regardless of their philosophical orientation, tended to hold more protectionist attitudes toward animals than the general population. Indeed, getting involved with the animal rights movement often entails a more extreme stance (Herzog 1993). According to a recent survey among U.S. residents (Responsive Management and the National Shooting Sports Foundation 2008), however, the general population is far more willing to endorse the animal welfare than the animal rights position.

Not only is there a wide range of attitudes regarding animal treatment, but these attitudes often have a specific context (e.g., species related). For example, it has been found that using animals in education or medical research is more acceptable to most members of society than using them in product-testing research or for manufacture of clothing (e.g., fur coats). In addition, the nonlethal use of animals, as in dog shows or horse racing, tends to be more acceptable than using animals in a way that will cause severe injuries or death, as in dog fighting, bull fighting, hunting, or fishing (Driscoll 1992, 1995; Wells and Hepper 1997; Wuensch and Poteat 1998). The acceptability of various forms of hunting and fishing is also dependent on the underlying motives of the hunter/fisher and the methods used in the chase (e.g., consumptive motives like hunting for meat are more accepted than nonconsumptive motives such as hunting for sport; Kellert 1996; Responsive Management and the National Shooting Sports Foundation 2008). Studies of recreational fishing have produced similar results (see below).

The context-specific nature of attitudes regarding treatment of animals is also evidenced by differences across the types of animals under consideration. For example, it is considered more acceptable to use small rodents or invertebrates in animal research than it is to use dogs, cats, or nonhuman primates. Along a sociozoological continuum (Sandøe and Christiansen 2008), fish have been found to fall somewhere between cats and monkeys, on the one hand, and cockroaches and leeches on the other (Driscoll 1992; Hagelin et al. 2003). Similarly, when investigating the extent to which humans assign a wide array of mental capacities such as intention, morality, pain, or suffering to a variety of animals, fish were consistently reported to rank in the middle or at the bottom of the list of animals (Eddy et al. 1993; Rasmussen et al. 1993; Herzog and Galvin 1997). These lists basically reflected the phylogenetic order of animals. In a recent study from Germany (Riepe and Arlinghaus 2012), a similar pattern was observed, but 66% of over 1,000 randomly surveyed residents believed that a trout could feel pain, and 48% believed that a trout could suffer. Using a slightly different approach, with respondents judging 33 animals along six evaluative dimensions (e.g., useful vs. useless, lovable vs. unlovable), Driscoll (1995) identified three major clusters of animals with ratings that were consistently less reflective of biological taxonomy and more of the role the animals play in human life. For instance, trout were allocated to the same cluster as chickens and earthworms, all of which are useful to humans (e.g., food, improving the soil), whereas sharks joined mosquitoes and rats in another cluster of animals perceived as dangerous, not very useful, and not very lovable either.

Thus, the type of animal under consideration, along with its perceived characteristics and usefulness to humans, is an important determinant of attitude variability within society. It is important to make a distinction between the characteristics of the animal (e.g., whether or not it is perceived as valuable) and the attribution of human characteristics to animals (e.g., whether animals are perceived to be capable of moral reasoning). Both can strongly influence how humans feel about the use of animals. Anthropomorphic thinking is a person-related trait that is believed to have evolved naturally in the human species to facilitate hunting abilities (Kennedy 1992; Mithen 1996; Manfredo 2008). The tendency toward anthropomorphic thinking is generally expressed in a way that promotes a sense of social connectedness with, and caring for, animals (Katcher and Wilkins 1993; Serpell 2003; Vining 2003).

Anthropomorphism is highly correlated with the perception of similarity between humans and animals. The more humans perceive an animal as similar to themselves or to humans in general, the more they tend to assign cognitive abilities or the capacity to experience pain to that animal and the more uncomfortable they feel at the thought of using the animal for food (Eddy et al. 1993; Plous 1993). Thus, it is no surprise that there is a "tendency for people to feel more sympathy for mammals than for fish and birds" (Pallotta 2008, p. 162). Anthropomorphism and perceived similarity between humans and animals have been found to be positively correlated with attitudes toward animal rights (Wuensch et al. 1991), priorities for saving endangered species (Plous 1993), and pro-animal welfare attitudes (Herzog and Galvin 1997), whereas a negative relationship was demonstrated as regards support for other types of animal use (Knight et al. 2004). Because not all people attribute the same characteristics to the same type of animal to the same degree, there is systematic between-subject variance in this trait (Herzog and Galvin 1997), and thus between-individual variance in the degree of anthropomorphism is to be expected.

From the above one can hypothesize that the more a fish or a fish species is perceived to exhibit mental and cognitive abilities similar to those of humans, and the more it is thought of as useful and likeable, the more negative the attitude of the public toward practices that interfere with the welfare of the individual fish will be. So far, fish have been found to be offered less "moral protection" than other species of wildlife or pets or charismatic mammals in most social–psychological studies conducted on this topic. This, however, does not mean that the treatment of fish in the context of recreational fishing is any less relevant to the public than, say, hunting of charismatic mammals, as the following discussion will show.

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ATTITUDES OF THE PUBLIC TOWARD RECREATIONAL FISHING IN VARIOUS URBANIZED SOCIETIES

The background reviewed so far is of particular relevance if it affects the attitudes of the public toward recreational fisheries. This can best be revealed by looking at recent surveys about how the public thinks and feels about recreational fishing and selected practices, such as catch and release, that have come under increasing scrutiny by those who are keen advocates of protecting the welfare of fish against humans in light of the hypothesis that fish may suffer in the process of fishing (de Leeuw 1996; Balon 2000; Huntingford et al. 2006). Unfortunately, most of this research is cross-sectional and lacks a longitudinal perspective. But looking at the beliefs and attitudes prevalent in different countries on the subject of fishing can still be helpful, illustrating how anti-angling attitudes influenced by animal liberation and animal rights philosophies are established in many postindustrialized societies worldwide. The results (shown below) from the most important survey-based studies conducted in various industrialized countries provide empirical evidence.

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Austria

A majority (>50%) of 722 randomly selected non-anglers surveyed by telephone in Austria agreed that recreational fishing is a reasonable and healthy leisure activity, providing an important contribution to the conservation of aquatic ecosystems (Kohl 2000). About a fifth (22%) of respondents, however, agreed with the statement that “recreational fishing constitutes cruelty to animals.” Similarly, about one fifth thought that recreational fishing disturbs the ecological balance and that recreational anglers do not care enough about nature and are only interested in an abundant fish harvest.

Germany

There are two recent studies looking at how recreational fishing is perceived by the German public. In 2002, 57% of a random sample of 323 telephone-interviewed people agreed that recreational fishing is a reasonable leisure activity, whereas 21% disagreed (Arlinghaus 2004). In 2008, however, the percentage of people agreeing with the idea that recreational fishing is a reasonable activity dropped to 35% in a study involving face-to-face interviews with over 1,000 randomly selected German residents (Riepe and Arlinghaus 2012). In 2002, 26% indicated that recreational fishing should be constrained in its scope, and 27% felt that recreational fishing means unnecessary cruelty to animals (Arlinghaus 2004). Figures from 2008 mirrored these findings (Riepe and Arlinghaus 2012). In addition, in 2008 a third (35%) of respondents agreed with the statements that “fish are suffering unnecessarily due to recreational anglers” and that “catching and releasing fish during recreational fishing constitutes unnecessary cruelty to animals.” Almost one fifth of the German public (19%) agreed with the statement that “recreational fishing should be abolished because of anglers’ cruelty to animals” and 15% indicated that they would take part in a ballot on banning recreational fishing. Finally, about a quarter (26%) thought that there is a pressing need to improve issues of animal welfare in Germany, despite recreational fishing being already heavily constrained and regulated for animal welfare reasons (Arlinghaus 2007).

The 2008 study by Riepe and Arlinghaus (2012) also showed interesting patterns relating to the perceived morality of selected recreational fishing practices. Most people (61%) found recreational fishing with the intention of eating the fish morally acceptable, but 10% found catch-and-eat fishing to be immoral. When asked about the morality of selected fishing practices from a fish welfare perspective, perceptions varied depending on which angling practice was under consideration (Figure 2). Though only about 20–30% of the public regarded retention of fish in keep nets, stocking bodies of water with harvestable fish for immediate capture by anglers (put-and-take fishing), and voluntary catch and release of harvestable fish as immoral, for other practices the respective figures were as follows: 57% for use of live baitfish, 65% for non-harvest-oriented competitive fishing events, and 87% for killing fish by hypoxia (rather than rapid kill; see Davie and Kopf 2006). The public was also asked in the 2008 survey to evaluate various types of catch-and-release practices. Twenty-one percent of those surveyed considered selective harvesting with voluntary catch and release to be immoral, and 40% felt that total catch and release was unethical. The results as a whole showed that recreational fishing and some of its practices are viewed negatively by a large proportion of German society, which might explain in part why recreational fishing in this country is already so heavily regulated in favor of animal welfare (Arlinghaus 2007).

England and Wales

Simpson and Mawle (2005) compared surveys from three time periods (2005, 2001, and 1997) in England and Wales, reporting that across all time periods most people viewed recreational fishing positively. For example, in 2005 71% (73%, 2001; 75%, 1997) agreed with the statement that “angling is an acceptable pastime.” Close to a majority (53, 46, and 54%) agreed with the statement that “anglers care for the environment.” There was less certainty among the public about whether “angling is a cruel pastime.” About a quarter (24, 24, and 27%) agreed with this statement, around half (47, 52, and

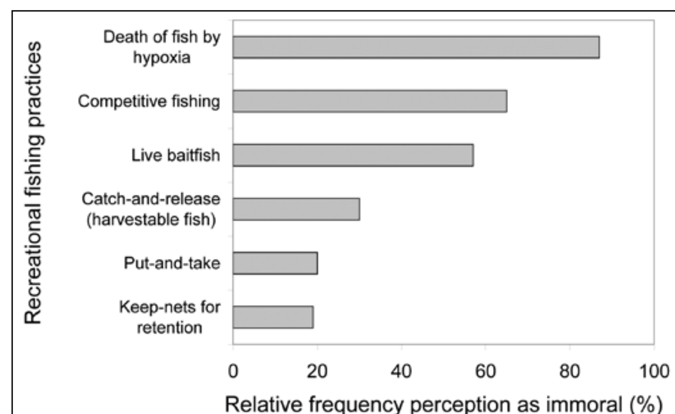

Figure 2. Percentage of the public aged 14 and older in Germany perceiving selected recreational fishing practices as somewhat or very unacceptable. Data are from 1,042 randomly selected people resident in Germany surveyed in 2008 (Riepe and Arlinghaus 2012).

52%) disagreed, and 26% (24% and 18%) were indifferent. Results reported by Simpson and Mawle (2005) suggested that young people (12–16 years old) still hold positive attitudes toward fishing in general, though less positive than those of adults (and less positive in 2005 than in 2001).

Finland

Recreational fishing is very popular in Finland, with participation rates at about 40% of the population (Toivonen 2008). From a fish welfare perspective, public discussion has mainly taken place on the topic of voluntary catch and release of legally harvestable fish. Mikkola and Yrjölä (2003) conducted a survey of 2,371 Finnish residents, of whom 43% were anglers. About 50% of all respondents, as well as half of all non-angling recreational fishers (i.e., those employing gill nets rather than rod and reel) included in the sample believed that catch and release constitutes unnecessary harassment of fish, and 20% of all recreational anglers responding to the survey thought that voluntary catch and release of legally harvestable fish should be forbidden (Mikkola and Yrjölä 2003). About half of all non-angling fishers thought that there should be a ban on catch and release. This negative image of catch-and-release fishing probably reflects the tradition in Finland of subsistence-type fishing (Salmi and Ratamäki 2011). Indeed, only 30% of Finnish anglers practice voluntary release of some fish, and only 4% release all of the fish they capture (total catch and release).

United States

Of the countries represented here, recreational fishing participation in the United States ranks second after Finland in terms of numbers of people involved. Despite recent declines in recreational fishing (U.S. Fish and Wildlife Service 2006), the activity remains highly visible in public and political discourse and is regularly featured in the media. It therefore comes as no surprise that about 90% of Americans approve of legal fishing and support using fish for food (Driscoll 1995; Phillips and McCulloch 2005; T. Teel and M. J. Manfredo, unpublished data). Opinions changed, however, when the focus was on recreational fishing for sport (Figure 3). Though in the less urbanized states of Alaska, North Dakota, South Dakota, and Idaho about 20% of the public agreed that angling for sport is cruel, slightly higher percentages (25–30%) were documented for the more urbanized states of Colorado and Arizona. The results suggest that in the United States levels of anti-angling sentiment are consistent with those reported in other postindustrialized countries such as Germany, where stringent regulations on recreational fishing have already been put in place.

As the above compilation of surveys reveals, in some postindustrialized and highly urbanized societies a sizeable proportion of the public (roughly 25%) perceives certain forms of recreational fishing as cruel and as “playing with fish for no good reason” (Aas et al. 2002). In view of the (presumed ongoing) shift from utilitarian to mutualist wildlife value orientations that goes with modernization, it is likely that this proportion will increase in postindustrialized societies in the future.

IMPLICATIONS OF MORAL OPPOSITION TO RECREATIONAL FISHING FOR FISHERIES REGULATIONS

The animal suffering-centered arguments popularized in philosophical literature, especially the writings of Singer (1990), and reflected in public opinion as reported above have been institutionalized in the legislation of some European industrialized countries. These examples show that regulation constraining common recreational angling practices, inspired by fish welfare/liberation/rights ideals or a cocktail of anti-angling arguments, can indeed become reality. For example, the concept of the dignity of animals, including fish and their intrinsic value in the spirit of Regan (1983), was included in the new Swiss Animal Welfare Act of 2008. The act makes the intention of voluntary catch-and-release fishing an offense because it is in conflict with the dignity of the fish and its presumed ability to suffer and to feel pain. A similar ruling had already been in force in Germany since the 1980s, in which, based on a combination of arguments related to inherent value and fishing practices thought to induce pain and suffering, activities such as voluntary catch and release, use of live baitfish, use of keep nets, and tournament fishing were partly (keep nets), implicitly (voluntary catch and release; Arlinghaus 2007) or explicitly (tournament fishing, use of live baitfish, in some states voluntary catch and release; Berg and Rösch 1998; Meinelt et al. 2008; Arlinghaus 2007), banned. Similarly, put-and-immediate-take fishing is found unacceptable because the only justified reason for going fishing is to capture fish as food, and thus legally sized fish must not go through a further catch process after stocking. Anglers also have to take a course in the proper handling of fish before being allowed to obtain an angling licence (von Lukowicz 1998). The argument runs that it is legally acceptable to go fishing only if one has the intention to catch fish for food (Arlinghaus 2007). Thus, if recreational fishing provides sufficiently high benefits (in terms of harvest and nutrition for the individual), it is deemed acceptable in Germany; otherwise, it is not (e.g., tournament fishing where the benefit is pleasure only is not considered a justified reason to

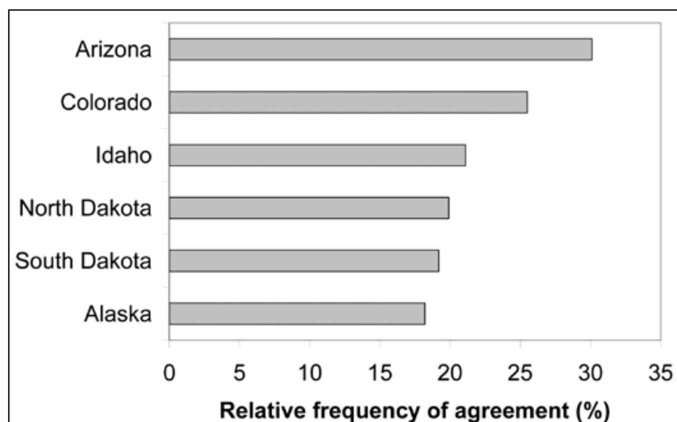

Figure 3. Percentage agreement with the statement (item) “Catching fish for sport is cruel” in six U.S. states. Data are from a representative survey on wildlife value orientations published by Manfredo et al. (2003), but item-specific results presented here were not published in this source.

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inflict pain on fish). Wider economic benefits created by angling are usually not considered a sufficient justification—it all boils down to the individual benefits experienced by the angler, and here food provision is currently the only acceptable reason (Strubelt 2010).

Although the German regulation may at first sight be considered straightforward (all fishing practices that do not fulfill subsistence needs, including voluntary release of harvestable fish, are considered illegal), there remains substantial regulatory uncertainty that creates confusion and conflict (Arlinghaus 2007). In addition to the legal difficulty of proving the intention of an angler in a court case (Niehaus 2005) there could be other problems: what if an angler had intentionally targeted a particular fish species for household consumption and would therefore release a fish that did not belong to the targeted species (i.e., bycatch)? This release might be considered acceptable according to the perspective of some public prosecutors in Germany (Drossé 2003), but others might judge differently. A similar catch-and-release event, with identical biological consequences for the individual fish, would be considered legal if conducted mandatorily (e.g., when releasing legally undersized fish), but if a legally harvestable fish is released voluntarily by an angler who intended to do so before starting the fishing day, this would be deemed illegal. The reason for this apparent inconsistency is that, for moral reasons, it is the intention of the angler and the resulting cost–benefit trade-off in terms of food versus fish pain that matters, not the mere biological consequences for the fish per se (Arlinghaus et al. 2009; Arlinghaus and Schwab 2011). Similarly, in Germany tournament fishing with catch and release is prohibited today, but this does not mean that tournament-like fishing has ceased to exist. In fact, the community of recreational fishers interested in meeting to determine a "winner" has simply renamed the way such fishing operates, justifying the meeting and joint fishing for small, overabundant cyprinids with the reason to remove fish for ecological reasons rather than for fun (Meinelt et al. 2008). Obviously, legal uncertainty remains, which may create confusion. Irrespective of this ongoing discussion, legally speaking, suffering-based arguments, as in the case of Germany, or dignity- and suffering-based arguments, as in the case of Switzerland, have resulted in a situation where the intention of the angler is of paramount importance when judging whether an activity such as catch-and-release fishing or tournament fishing is deemed ethically permissible (sensu Olsen 2003). If fish were not sentient and did not suffer, there would be, at least on the face of it, no moral issue whatsoever in Germany and Switzerland; this is classical animal liberation reasoning in the spirit of Singer (1990; see Table 1). So the question of whether fish can indeed feel pain or suffer is of paramount philosophical and legal importance. It is maybe for this reason that the question of fish pain is so hotly debated in fisheries literature (Rose 2007; Sneddon 2009).

It is important to note that the level of protection afforded to fish does not, strictly speaking, depend on the ability of fish to feel pain, as argued elsewhere in detail (Rose 2007; Arlinghaus et al. 2009). Only in animal liberation philosophy, and to some degree in animal rights philosophy, as well as in current legislative texts in Switzerland and Germany is the judgment of the immorality of recreational fishing contingent on the ability of fish to feel pain or to suffer. Possibly, the German and Swiss lawmakers needed a criterion to demarcate between the level of protection afforded to various taxa, and pain perception stood out as a reasonably justified criterion. However, even if fish would not suffer or feel pain consciously during the process of angling, regulatory bodies and anglers concerned with their welfare may still offer them some level of protection, because some take the view that angling-induced physiological disruption, injury, or behavioral impairment of fish is alone important enough to justify protective action (Arlinghaus et al. 2009). Addressing harm as much as possible through proper handling and practice is the position of the so-called pragmatic approach to fish welfare (Arlinghaus et al. 2009), which rests on objectively measurable outcomes in fish and argues for reducing negative endpoints in fisheries practice (such as physiological change or behavioral impairment) as much as is feasible. A pragmatic view of fish welfare would thus seem to be a more comprehensive standpoint than a suffering-centered perspective in the spirit of Singer (Arlinghaus et al. 2009). The pragmatic approach to fish welfare, however, is not without its detractors and is sometimes misinterpreted as justifying any treatment of fish (e.g., Volpato 2009). At the moment the suffering-centered view seems to enjoy greater support from those who dislike recreational fishing on moral grounds, presumably because the implications are potentially more severe in terms of constraints imposed on the activity (Arlinghaus et al. 2009). For example, the Committee on the Environment, Public Health and Food Safety of the European Parliament in Brussels started working on a proposal by the European Commission for a new directive on "Protection of the Environment through Criminal Law." Among the proposed amendments to the draft was Amendment 34, which would have made "pleasure hunting and poaching" a criminal offense (Buitenweg and Breyer 2008). The amendment was rejected in the political negotiations, but the episode shows that the idea of a ban has reached the highest political level. The same political forces that advocate a ban on hunting also promote a ban on recreational fishing.

But even if mutualist value changes influence pro-animal policies and regulations, it must be recognized that there are very different approaches to dealing with emerging pro-fish welfare viewpoints in different societies. It is by no means a natural law that constraints on recreational fishing practices will necessarily follow if social values with regard to wildlife become more mutualistic. The management and treatment of voluntary catch and release of legally harvestable fish is a good example. Though in some countries, due to the influence of the suffering-based argument, this practice is forbidden (Switzerland) or not tolerated (Germany), and in others it is disputed (e.g., Finland; Salmi and Ratamäki 2011), England and Wales have recently passed a by-law limiting the take of coarse (i.e., non-salmonoid) fish from freshwater fisheries, even though these countries probably have the most advanced and radical pro-animal welfare and pro-animal rights lobbies. Thus, the killing of fish is strongly constrained in England and Wales, and the release of legally harvestable fish is prohibited in Swit-

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zerland. Both policies are intended to address aspects of fish welfare, yet the motivation in each case is different. In England and Wales the issue is to protect fish from overharvesting, whereas in Switzerland the priority is to ensure that anglers behave ethically, going out on a fishing trip with the sole intention of bringing fish home for dinner.

To compare such contrasting outlooks might be perceived as skewed, but it can well be explained. First, the active fish welfare debate in England and Wales has its roots in aversion to the use of animals in research; the consideration of fish welfare in the context of other human uses, such as fishing, is a relatively recent arrival. Second, recreational fishing is politically well supported in England and Wales, whereas in Switzerland and Germany anglers are less effectively organized, politically weaker, and overall enjoy less political support. Therefore, though bids to curtail practices such as catch and release (Branson and Southgate 2008) do not receive wide political support in the UK, they fall on fertile ground in Switzerland and Germany. These contrasting solutions to common difficulties indicate the paramount importance of history and culture and also of the lobbying and political support of the recreational fishing sector, which can strongly influence the development of pro-animal welfare ideas and their legal implications for common fisheries practices.

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CONCLUSIONS AND IMPLICATIONS

With the rise in mutualist value orientations in postindustrialized societies, there is a possibility that extremist positions (or elements thereof) influenced by animal liberation or animal rights arguments might find their way into nongovernmental organizations, science, politics, and, ultimately, legislation. Such a development is particularly challenging for recreational fishers when it occurs where they have little political support. Without sufficient support, radical claims portraying anglers as cruel sadists who play with fish for no good reason (see Arlinghaus et al. [2009] for a detailed account) can be rhetorically effective. Powerful intervention is needed to counterbalance such tendencies in a society where hunting and fishing are becoming less prominent and where an increasing percentage of the public has lost contact with wildlife and nature (Manfredo 2008). The most important strategies may be to (1) develop an appreciation of potentially conflicting viewpoints and try to understand them; (2) strengthen political support and lobbying; (3) address practices that are hard to reconcile with contemporary fish welfare ideas (e.g., engage in rapid kill rather than letting a fish die slowly by hypoxia); and (4) repeatedly remind the public and political decision makers about the various benefits that recreational fishing offers. Yet despite all of these measures, it is likely that the changes in social values will lead to more negative attitudes toward recreational fishing practices in the future. Compared to other historical and epoch-making events (man landing on the moon, the Berlin Wall falling, etc.), a future ban on recreational fishing (or certain connected practices) in postindustrialized societies is not as unlikely as it may at first sound. A ban can also happen in piecemeal fashion, and in fact it does, as the examples from Switzerland and Germany have shown. In these countries, the legal prerequisites for abolition of recreational fishing are already in place. In Germany an angler needs a "reasonable reason" to be allowed to fish recreationally and thereby intentionally inflict pain and suffering on the supposedly sentient fish (Arlinghaus 2007). Currently, the legally accepted reasonable cause is personal fish consumption, and anglers must have the intention to harvest before casting (Arlinghaus 2007). It may only need a willing and able public prosecutor and some judges with anti-angling sentiments to further the case by asking, "Is recreational fishing reasonable, irrespective of the intention of the angler?" One might be inclined to say, "It is never going to happen here," which might have been what the Swiss angling community thought before voluntary catch and release was banned by law in 2008. Obviously, this development was probably facilitated by poor political support in the recreational fisheries sector, but it also exemplifies how a particular social climate that is concerned with the (suffering-defined) welfare of fish targeted by recreational anglers can have immediate implications for fisheries practice, including constraints on the set of tools available to fisheries managers for managing and conserving wild fish populations.

The future for recreational fishing is changing, as is the public's interest in, and support for, this activity. This creates a challenging environment for fishery managers. In this article, we have highlighted the important roles of philosophy, culture, and societal change in shaping the public's views on wildlife, as well as their attitudes toward recreational fishing. Judging by the evidence reviewed, we would expect that recreational fishing practices such as tournament fishing, live-baiting, etc., will be faced with increasing public scrutiny. Dealing with the emerging conflicts cannot be achieved solely by objective social and natural science, because the underlying discussion is moral in orientation and is largely based on ideology. By paying attention to the issues and developments presented in this article, the fisheries profession can, however, take on the challenge proactively. Further social science research will be needed to examine whether the presumed global shift in wildlife value orientations is indeed happening along with postindustrialization and modernization and what the likely consequences of this shift will be for the fisheries profession. Irrespective of this, what is required is effective outreach and increased investment in educating the public about the realities of fishing, in terms not only of social and economic benefits but also of what we currently know about the cognitive and emotional abilities of fish and the determinants of their behaviors. This would help to maintain a reasonable and scientifically credible knowledge base more resistant to biased media reports and political lobbying by those who dislike fishing on moral grounds.

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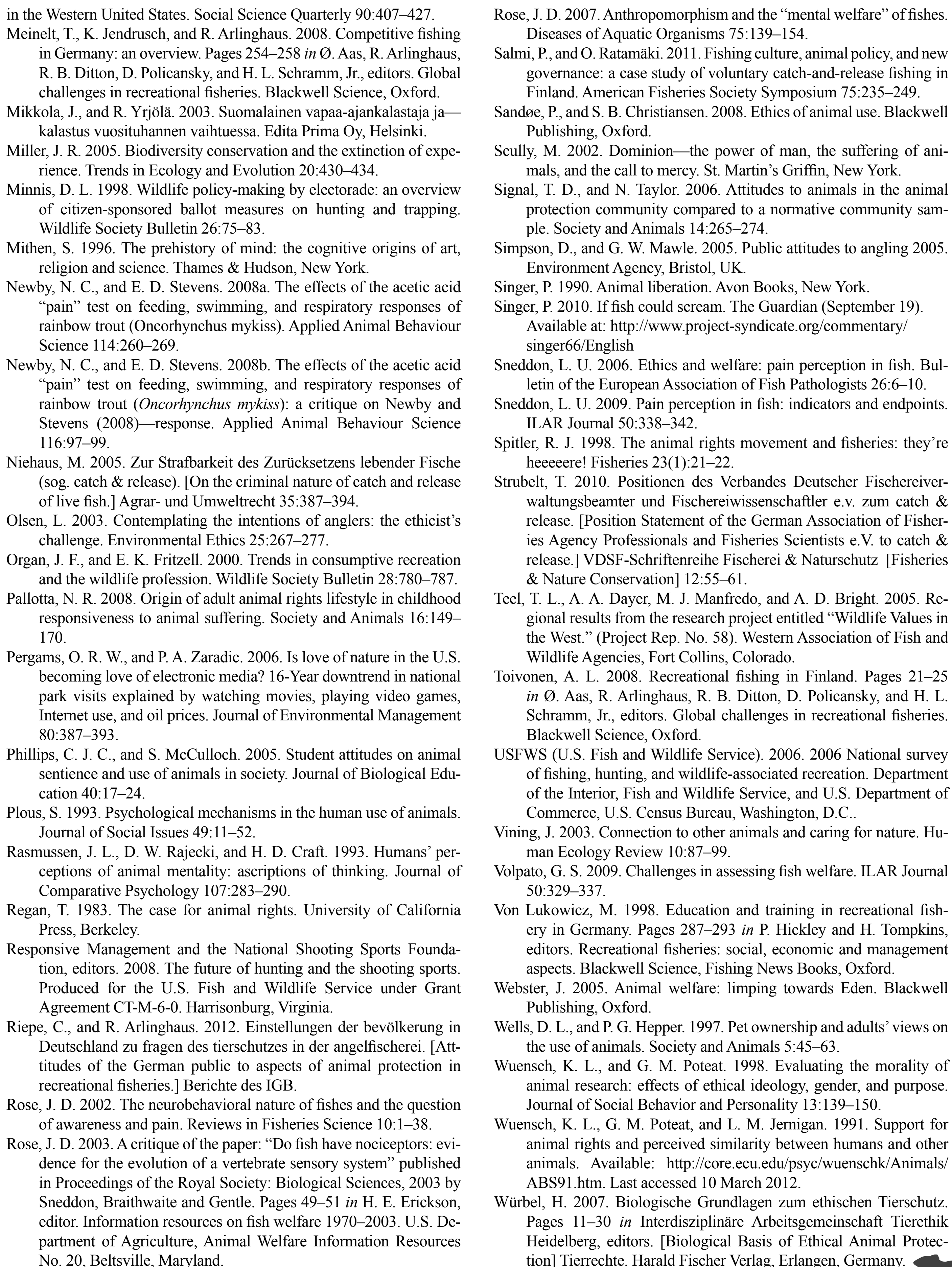

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