

## **Defending fishes against recreational fishing: an old problem to be solved in the new millennium\***

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### **Introduction**

*Who hears the fishes when they cry?*  
Henry David Thoreau (1849)

This editorial is the consequence of a scarifying experience. I once was asked to deliver a lecture on animal care and welfare to members of one of Canada's Humane Society branches. Faced with a large audience, to give myself and them time to adjust, after being introduced, I decided to focus their attention by asking them to answer a question: since my work deals mainly with fishes, I wanted to know how many of them were 'sport' fishers and would those of them who at least on some weekends fish by hook and line for recreation lift their hands? About 80% did so . . . Then I asked them whether or not they were ashamed, since what they were doing to fishes for recreation was much more deplorable than the use of laboratory animals. Was it not a double standard to oppose activities with animals that form only a very insignificant portion of human-to-animal interaction in comparison with millions of recreational fishers? I declared that I was sure they had not consciously decided to attack the less politically and economically powerful group of scientists, but that it very much looked as if such was the case. We all know, I pointed out, that politicians, if themselves not anglers, support recreational fishing in order to satisfy millions of voters, who travel to motels and camps, buy fancy fishing and camping equipment, vehicles, gasoline, boats, fishing licenses, and much more (e.g., Pearse 1988). It could be said that angling resembles tobacco smoking in being a pastime and an addiction that contribute enormously to the economy. At that point part of my audience started to leave in anger, evidently taken by surprise. Most remained, however, although clearly disturbed. When the time for questions came, several persons voiced angry disapproval of my ideas and departed, but the half of the audience that remained began a prolonged discussion with the admission that they had never thought about recreational fishing in that way. Together, we ended up attempting to solve mostly ethical problems.

In 1987, during my sabbatical in South Africa, I published a short essay on the topic in *Ichthos*, the newsletter of the J.L.B. Smith Institute of Ichthyology. It was dictated as a spontaneous outcry, within an hour, and promptly published. No one then expected the violent reactions it caused. First, local journalists took up the theme, mostly in defense of recreational fishers. Letters to the editor, radio and TV broadcasts followed along the same lines. In the heat of arguments that

gradually spilled from local to international media, I was attacked but rarely asked to defend my position. But one morning I received a call from a journalist who had been asked to let me know that not all of her colleagues are against me: 'The evening before', she said, 'a debate on the topic of "sport" fishing in our club ended with a 50/50 split, i.e., half of us defended your position against the other outraged half'. The only serious argument against my case was that fishes do not feel pain; an issue not touched directly in my essay and only part of the problem.

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\*Editorial

In order to be allowed to run an experiment using fishes, scientists in most European countries must have undertaken a state-accredited course on the ethical treatment of their subjects, including stress-free living conditions, anesthesia, and the ethical termination of life. Such guidelines even pose a dilemma for those developing new commercial catching gear since these must be tested under field conditions, preferably in an ethically responsible manner. Scientists without such qualifications are currently not allowed even to supervise students who intend to perform thesis work on fishes, and the students themselves must complete their qualifications within an allotted time. In North America (Committee 1993) and elsewhere various animal care regulations are not far behind. To join the ranks of the enormously more numerous recreational anglers, all one needs is money for a licence and gear.

### The original essay

A slightly revised version of my essay in *Ichthos* is reprinted here. I have removed the contentious aspect of 'sadism' that proved to be one of the main irritants in the original. Perhaps the time has come to be better received now than before.

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'What I am going to say about "sport" fishing will for sure irritate many. After all we are conditioned to accept it from early childhood when accompanying parents in pursuit of this popular pastime. There is some thrill in challenging the invisible – to penetrate an environment other than ours – and so gamble with luck. Some will claim that the kitchen value of the catch is what they are after, others will enjoy tinkering with the gear and bait, most will admit a fight to land the catch is the excitement they are after. **Gambling** is probably the subconscious allure to all.

Be that as it may, my lectures on ethics to classes on fisheries science and ichthyology always caused embarrassment to the students. They never looked at it that way, most claimed afterwards. Some thought of it more after the lecture and remained concerned, others dismissed it with annoyance and a few were badly upset. Let me now test the reaction of a wider audience.

Professional hook-and-line fishing for food is similar to hunting. The goal is to capture, or kill quickly and efficiently. Wounding or prolonging the kill is not strived for. The difference between the above and

"sport" fishing is the **intent**. Most recreational fishers are interested less in the kill or catch as in fooling the fish often by a weird type of bait, or in prolonged, "skillful" landing by means of the finest line possible, or the smallest hook. (Fly-fishing contests on turf playgrounds attest to it being, among others, a skill testing game.) Such fishing is viewed as a "sport"<sup>1</sup> done for pleasure, recreation, and competition with the excitement of an unknown outcome an added attraction.

How justified are humans, the only organisms on earth capable of reasoning [but see, e.g., Popper & Eccles 1977, Linden 1999], in pursuing a leisure activity aimed entirely at deceiving other organisms not endowed with the power of reasoning? Is the victory anything to be proud of? How justified is it to pierce the mouth or other vital organs of another organism under the pretense of offering food and to prolong this creature's agony by hauling it out of its element? One can hardly claim it to be a predator and prey game, so common in nature, part of which hunting, commercial or food-fishing may be considered. Do we have the right at all to take the life of another organism for little more than our pleasure only, in order to satisfy some craving for torture or to feel superior by fooling the other organism? Do we have the right to use other living beings as dice in a gambling game?

Various animal-rights groups have recently focused on researchers using animals for experiments. Some activists even resorted to violence, vandalizing laboratories and releasing captive animals. I have rarely heard of them opposing "sport fishing". Scientists using animals in experiments rarely do so without good reason, nor do they torture the animals wittingly. Their intent is different. In spite of that I have always told my students to be aware of the other organism's life, not to consider it simply a God-given right to take such life, and to do so only if well justified and in numbers needed.

Can it be that the humane societies or the militant animal-rights activists interfere in the wrong place because of political and economic cowardice? It is after all different to criticize a mass activity of such economic importance (sales of fishing gear, camping equipment, vehicle, gas and lodging) and with such political power (licence fees, masses of voters), even if the wrongdoing is so obviously intentional. Probably

<sup>1</sup> Angling can hardly be considered a sport, in spite of its popular name. Because of that view the term is put in quotation marks wherever retained.

some of these activists are “sport” fishers and it seems never to have occurred to them that their own actions are more deplorable and cruel than what they fight against.

However, I am not writing this to start a crusade of animal-rights activists against sport fishermen. I would rather try to prevent this from happening. I believe that humans are capable of fair judgement and of correcting wrongdoing if made aware of it. If they are already addicted, however, a drastic cure of public disapproval may be needed, and such may take as long as the cure for addiction to smoking. Perhaps the right of every organism to live is a cliché we have become tired of, but deliberate disregard of life should be another matter altogether.

Billions of dollars have been spent to satisfy the demands of ‘sport’ fishermen. Recreational fishers are able to access the most remote water bodies and aim at the best trophy fishes, the most valuable and desired species, the most fertile adults. During the last 25 years I have witnessed a dramatic shift in political concern in Ontario: a shift from support of commercial to that of recreational fishing. I have witnessed the worldwide introduction of alien species to ‘improve’ recreational fishing. The introduction of alien Pacific salmon into the Laurentian Great Lakes is currently considered a great success that supports a vigorous ‘sport’ fishery. After landing, some of the proud anglers dump the salmon on the shore to rot, with the justification that their flesh is too contaminated by pollutants. Some are interested only in the fishing thrill, not the fish, and do not even try to justify leaving the trophy behind. Some others release the fish to be caught (and tortured) again! The idea that recreational fishers and their organizations are instrumental in the conservation of natural resources is largely another unfounded myth. The haphazard introductions of harmful alien species, the use of polluting gasoline engines, and the beer-cans alone which litter some frequented shores, attest clearly to the contrary. I better rest my case at that.

I cannot keep silent any more and feel that to promote an interest in fishes should not include having them ‘tortured’. Humans are predators with consciousness, therefore even if we have to take the life of another organism, we should do so with humility and without the automatic assumption that it is our right. To do so for leisure and pleasure only is a highly questionable activity. To advertise, profit from and boast of such activity is plainly unethical, cynical and undignified for reasoning humans. Now I truly rest my case.’

### **The immediate responses**

An editorial by Mike Bruton (1987a) in *Ichthos* on fishing competitions preceded my essay ‘In defense of fishes . . .’ reprinted above. His editorial questioned whether fish stocks could withstand the constant barrage of angling competitions, and called for tougher control measures over angling. My essay (Balon 1987) was intended to elicit reactions on angling for recreation. The size of that reaction, however, went far beyond Mike’s and my expectations and proved that the problem is indeed very serious. It also opened up debate on aspects of the problem not anticipated by me and others.

Most of the news media reactions were motivated by hurt and anger that someone dared to question the legitimacy of their favorite pastime. A few respondents published positive supports (e.g., *Mercury Reporter* 1987, Jackson 1987), and Truman (1988, p.8) in *Angler & Hunter* magazine concluded that ‘Balon is a moderate who seems to recognize the need to take animals and fish (we do eat meat and fish, after all). But, his position may be a taste of what’s ahead for anglers’. At the same time, the Sport Fishing Institute in Washington, D.C. established a committee on ethics in sport fishing (Anon. 1988). All that, however, to this day has not solved any of the ethical dilemma (see also Green 1991, Matlock 1991, Hughes 1999).

Two issues of *Ichthos* later, an attempt was made to put the ‘angling debate’ to rest. Mike Bruton (1987b,c), in order to limit damage to the Institute felt compelled to adopt an apologetic tone. Greenwood (1987), in contrast, tried to soften some of my arguments by raising the issue whether fishes feel pain, and by questioning my accusation of sadism and torture (see Eisler 1951). The question whether fishes feel pain was raised again in the next article by Cowley (1987) who, in addition, admitted his support of angling competitions as justified by their occasional usefulness to research.

The case of a catfish named ‘Bill’ in Lake Kariba caught on the same hook and baits several times in succession was used by Nick James (1987) to claim that angling is harmless to fishes. It is the typical defense of recreational fishers and a repetition of an old tune already sung by J.L.B. Smith who is referred to as an authority in this field. In the latest edition of *Smiths’ Sea Fishes* (Smith & Heemstra 1986) dedicated to J.L.B. ‘Who loved angling’, his old story (Smith 1949) that fishes do not feel pain, is repeated and expanded upon, unfortunately without presenting scientific evidence.

Hecht (1987) and Whitfield (1987) finally questioned the right of scientists, including me, to kill and preserve fishes. They were right, of course, but none of past misbehaviors diminished my concerns (Balon 1965).

### When the dust settled

For years after the original essay was published, I kept silent on the topic, dreading that I would play into the hands of animal rights activists (see Spittle 1998). There was, however, one exception. Some time after the Ontario Ministry of Natural Resources abandoned commercial fishers for recreational anglers (see Box), I could not keep silent when even most fishery researchers accepted that decision without reservation. During one CCFR<sup>2</sup> symposium where anglers were presented as the only fishers, I questioned the emphasis on 'sport' fishing by the following parable: 'Imagine that you would support a recreational activity called "sport birding". Such a sport birder, equipped with a hide, hook and line on a fancy rod with an even fancier reel, and with a bucket of water, sets this all up in the field. Putting an earthworm on the hook and casting

it away from the hide, the worm and hook are swallowed by a robin, *Turdus migratorius*. The shrieking and flopping bird is proudly wheeled toward the hide, the hook removed and the bird drowned in the water. Would anyone of you support such recreational activity? How does it differ from the sport fishing you support?' . . . The only rebuttal worth mentioning was that I also kill fishes for research, raised by a highly respected colleague. But my past actions (e.g. Balon 1974) cannot be an excuse for angling.

Recently, another ugly facet of recreational fishing presented itself to me when I visited a colleague working with the Chippewas of the Nawash First Nation on Georgian Bay. My visit coincided with the last day of the Owen Sound Salmon Spectacular Fishing Derby and the bay was full of various recreational fishing boats with the shores lined by land-based anglers. Many dead salmon floated among the debris in the nearby creek. When the natives arrived in their boat to pick me up, we were assaulted by shouts of anger and coarse language from all sides. This assault took place even though a member of the Peace Brigades International was with us on the boat. The aboriginal people are fighting for their constitutional and treaty rights to fish commercially in their waters (Crawford & Morito 1997), and they oppose the stocking with

<sup>2</sup> Canadian Conference for Fishery Research.

*Box.* The general attitude and the 'power' of sport fishermen are best illustrated by citations from articles on angling in a Toronto newspaper, with quotes by the Premier of Ontario, Canada.

John Power (1987, p. B8) concluded his article in The Toronto Star on Saturday 7 November 1987: 'Look out, they're after your fishing rods, led by University of Guelph professor Eugene Balon. He stated: "To promote an interest in fishes should not include having them ((tortured)). To do so (angle) for leisure and pleasure is a questionable activity a true friend of nature and animals should not be practicing. To advertise and boast of such activity is plainly unethical, cynical and undignified".'

Twelve years later, Rosie DiManno (1999, p. A3), a columnist for the same newspaper, wrote in an article entitled 'Hook, line and Harris. Waxing all nostalgic with the Premier . . . on a fishing trip with his son' on Sunday 11 July 1999: "'I grew up fishing with my dad", the Premier was recalling yesterday morning – Day One of the Toronto Star sponsored Great Salmon Hunt – while trolling aboard the 44-foot *Cabbagetown*, a Sea Ray cruiser accessorized with all the high-tech bells and whistles of contemporary piscatology, gotta go a half a million . . .'. The Premier continued: "My dad belonged to a club where they used to fly into these isolated places . . ." and some text further, "I guess I came along right at the end of that era where you fished to eat. Well, you didn't really."

A few paragraphs further the columnist states: 'The Premier, his 14-years-old son Mike Jr. (. . .) and natural resources minister John Snobelen, were here at the invitation of Harris' long-time friend and Star outdoors writer John Power'. And, of course, 'the boat was provided by Walter Oster, chairman of the Canadian National Sportsmen's Show and owner of the Pier 4 Restaurant . . .'.

In addition to the already mentioned, the boat was equipped by 'downrigger rods protruding aft, 17-pound monofilament lines dragging cannonball sinkers, digital line counters, a variety of sparkling, allegedly salmon-seductive spoons affixed to the leaders' (. . .) '– a graphic depth sounder and underwater cameras transmitting a constant visual feed from 40 feet below to two TV monitors.' For the accompanying color photograph, however, 'the fish was borrowed as the Harrises turned up empty handed – this time.'

As for the Premier's motivation the last two of his statements are revealing: "We didn't care much for bass, threw'em back. They just didn't taste very good. But bass is a great sport fish. Pound per pound, they fight the hardest." (. . .) "It's about out-smarting the fish," says the Premier, "getting it hooked, playing it, landing it. But it's also about the camaraderie."

Pacific salmon (Crawford 1999). Later I interpreted the ugly behavior of the recreational fishers to be motivated by the prevailing attitude that everybody else is trying to take **their** fishes. It reminded me of the behavior of the selfrighteous tobacco smokers only 10 years ago.

My disappointment in the ‘angling debate’ arose from realizations that even scientists are mainly conformists, a trend that makes ‘democracy the worst regime on Earth, except for all the others’, a saying attributed to Winston Churchill. When conformists turn into opportunists, we become disgusted, but rarely do anything about it. Their short term gains, while destructive and unethical, are rarely directly punishable. After all, opportunists can afford the best defense attorneys.

### **Preambulary thoughts added with hindsight**

My concern then and now is not about animal rights but about animal welfare and especially, human morality and just conduct. I like to eat meat and especially fishes. Therefore, I support the aquiculture of fishes, artisanal fisheries for food and subsistence, environmentally nondestructive<sup>3</sup> and sustainable commercial fishing for profit but without overcapitalization (Clark 1977), and recreational angling for food or as a supplement to family nutrition.

My objections are primarily against ‘sport’ fishing, recreational angling and fishing competitions not for food but for pleasure: enjoying the target’s fight to stay alive, enjoying the gambling aspects of the activity, and the companionship with other anglers while watching different organisms as victims (see Box). I am opposed to the consequent mismanagement of natural resources when nature is manipulated for the sole benefit of recreational fishing (Crawford 1999), ecosystems are disrupted by introduction of exotic species or man-made monsters (e.g., Berst et al. 1980, Dumais 1999), biodiversity is wittingly or unwittingly reduced by elimination of species of non-angling interest, the fish’s life histories are distorted by chronic stress, and remote ecosystems, often the last refuges of endogenous fish communities, are invaded and exploited by trophy anglers arriving by air and water crafts (contrary to management promises, Shuter et al. 1997).

<sup>3</sup> Explained in the Internet sites (<http://www.mcbi.org>) as well as (<http://www.americanocceans.org/issues/presses7.htm#trawl>), and by Watling & Norse (1998a,b), Auster (1998).

### **Is the question of whether fishes feel pain relevant?**

*The moral and ethical reasons for prohibiting assaults on men, babies, or animals is not that assault inflicts pain but that it destroys value.*

Patrick D. Wall (1992, p.63)

The question whether fishes feel pain was not a specific issue in my original essay. However, since so many have raised the aspect of pain as the major defense of recreational fishing, let me briefly review some of the problems this presents. The literature on pain in animals is extensive (e.g., footnotes in de Leeuw 1996, and on (<http://arrs.envirolink.org/pisces/listing.html#factsheets>)). Keele & Smith’s (1962) compendium presents evidence that since the neurophysiological pathways are the same, pain can be transmitted in animals as in humans. Iggo (1984, p. 15), therefore, states that ‘until it is clearly proven otherwise, we should assume that all animals suffer from pain as well as feel it’. Ultimately, Bateson (1991) supported by the results of Wigglesworth (1980), and Kavaliers (1988) concluded that even insects feel pain. Therefore, there are neither good scientific nor ethical reasons to deny that fishes feel pain (Stoskopf 1994, LaChat 1996). Consequently, a German court in April 1988 ‘fined organizers of an angling competition for cruelty after ruling that fish feel pain’(. . .) ‘Hooking fish, keeping them in nets and touching them for weighing were ruled to constitute “infliction of repeated or lasting pain to a vertebrate” – a legal offence’ (Evening Post, 19 April 1988, Klausewitz 1989; see also Spittler 1998).

To define pain is not easy – even in humans. Various individuals perceive it very differently. Each of us has a different ‘threshold’ of pain, as we used to call it for lack of better measure. Moreover, we have to be very careful not to anthropomorphize (Popper & Eccles 1977, Linden 1999). With regard to the mouths of fishes, Klausewitz (1989, p.88) concluded about this controversial matter the following: ‘Practical experience and experimental results indicate that in spite of the dense innervation of the mouth region [see also Sibbing 1988], physical pain does not seem to be severe. Biologically, this would make sense. Predatory fish often catch spiny prey that can cause considerable wounds in the buccal cavity of the predator. In many fishes, the apparently rather minor stress induced by a

short angling procedure does not leave a long-lasting memory engram. (...) A prolonged catching procedure, however, causes various intense stress reactions which often abate only after hours or days and can lead to a total physiological breakdown of the fish organism and to death' (my translation).

We have to assume that fishes do experience pain, and this line of defense must be invalid (see again <http://arrs.envirolink.org/pisces/factshee.html>). However, that issue has only a minor relevance to my main arguments against a recreational activity that uses other organisms' lives as gambling dice and their death as a source of enjoyment. Pain alone is only one of the possible adversities fishes suffer at the hands of anglers. Stress is always present and so are fear and suffering (Verheijen & Buwalsa<sup>4</sup>, Verheijen 1986, Klauswitz 1989, Stoskopf 1994).

In 1996 de Leeuw published an article 'Contemplating the interest of fish: the angler's challenge', that independently very much resembles the arguments in my original essay<sup>5</sup>. The essence of this challenge is that while 'hunters make every effort to reduce pain and suffering in their game animals, anglers purposefully inflict these conditions on fish' (p. 373). In what follows I will cite some of de Leeuw's (1996) arguments that elegantly summarize our concerns. First, what is the difference between anglers and fishes? 'The interest that anglers demonstrate in sport fishing is recreational and not a basic, or necessary survival interest. Lots of people don't fish. The interests of fish, however, are basic survival interest, shared by many other animals' (pp. 377–378). Consequently, 'to be morally just or correct is to incorporate respect for the well being and interest of others in our attitude and actions toward them. To override their interest is to potentially engage in a morally unjust and wrong act' (pp. 379–380).

As I mentioned earlier, the practice of catching and releasing cannot undo the wrong act, because 'all fish are injured by angling, and of those caught and then released, some inevitably die. Deaths resulted from severe stress and exhaustion caused by playing fish, loss of blood inflicted by hooks (...), overexertion, hyperactivity, blood acidosis, oxygen debt, and increased

blood lactate levels, resulting in internal blood clotting' (p. 381; see also Ferguson & Tufts 1992). Therefore it is troubling, for example, to read '... the excitement of the strength and the aerial acrobatics of a hooked muskellunge, which may take up to an hour to land, is a thrill no angler forgets' (Scott & Crossman 1973, p. 369).

Returning to the conclusions by Dionys de Leeuw (op. cit., p. 387) 'Whereas ethical hunters clearly respect the interest of an animal to avoid pain and suffering, anglers intentionally override these interests in fish. The enjoyments of catching fish for sport, in large measure, consist of purposely inflicting fear, pain, and suffering on fish by forcing them to violently express their interest to stay alive. (...) The very real challenge to anglers, then, is to find a justification for their cruel treatment (...). Unless such justification is found, I see no clear resolution of this dilemma other than for hunters and society generally to abandon all sport fishing' (p. 390).

Neither Chipeniuk's (1997) arguments, nor List's (1997) sophistry managed to soften de Leeuw's (1996) challenge. Other arguments in 'defense of fishing' also based on the assumption that fishes do not feel pain, and on Christian ethics are even less convincing (LaChat 1996). While in some instances anglers contribute to the protection of water bodies against polluters and builders (e.g. Willis & Garrod 1999), more often than not they conform to the wishes of designers of dams and dikes and laud the resultant new or changed water bodies (see Balon & Holčik 1999). Their desires and actions to eradicate taxa not of interest to anglers and to stock taxa of purely angling interest irrespective of their origin, are the most serious of their crimes against nature.

Consequently, catching live fish on hook and line other than for food, i.e., for pleasure, leisure, 'sport' or competition – and to manage ecosystems for that purpose (e.g., Crawford & Morito 1997) – is an unethical, deplorable and undignified activity of humans that the most enlightened anglers admit (Hughes 1999). It destroys the values of human dignity and biodiversity (Costanza et al. 1997). As stated by Wall (1992, p. 78) 'instead of agonizing over an undefinable concept of pain, why do we not simply study the individual's effort to stabilize its internal environment and then aid it, or at least not intrude on those efforts, without good reason?' At least, this is in agreement with the philosophy of the harmonious dualism that I named the 'Tao of life', the philosophy of coexistence, mutual

<sup>4</sup> Verheijen, F.J. & R.J.A. Buwalda. 1985. The contribution of pain and fear to suffering in hooked carp. 19th International Ethological Conference, Toulouse (poster).

<sup>5</sup> And so, incidentally, do the web pages of the 'campaign for the abolition of angling' cited above.

benefits, appreciation, and harmony (Balon 1988, 1989a).

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Science fiction writers, like poets, have often proven right in their intuition. Even more often they were right in setting moral and ethical standards that shame no one. Let me, therefore, conclude using words of Arthur Clarke (1958, p. 136): 'Within a century or so (...) we will literally be going outside the solar system. Sooner or later we will meet types of intelligent life much higher than our own, yet in forms completely alien. And when that time comes, the treatment man receives from his superiors may well depend upon the way he has behaved toward the other creatures of his own world'.

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3. I didn't have a problem with the new manager's ideas as [ ] , but I disliked some of his mannerisms. Question 2 of 7 Type the correct word here: 1. Tom is bound to get a real wake up [ ] when he enters the world of work after being closeted in the university for the last seven years. 2. Many young men answered the [ ] to arms and signed up as soon as war was declared. 3. That car nearly drove into us, it was a really close [ ] . Question 3 of 7.Â 3. The locals made a [ ] against the plans for a new by-pass through the country park. 1. Such. 2. Call.Â He found an old article on the same topic, and quickly typed it out. The next day, he submitted the paper. The following week, he was alarmed (see) the professor approaching him, looking angry. Balon, E. K. â€œDefending Fishes against Recreational Fishing: An Old Problem to Be Solved in the New Millennium.â€ Environmental Biology of Fishes 57 (2000): 1â€8. Google Scholar. Barthel, B. L., S. J. Cooke, C. D. Suski, and D. P. Philipp.Â â€œManagement and Conservation of Temperate Reef Fishes in the Grouper-Snapper Complex of the Southern United States.â€ American Fisheries Society Symposium 23 (1999): 233â€42. Google Scholar. Contreras-Sanchez, W. M., C. B. Schreck, M. S. Fitzpatrick, and C. B. Pereira. 2000 Defending Fishes against Recreational Fishing: An Old Problem to be Solved in the New Millennium. Environmental Biology of Fishes 57: 1-8. Bandara, Ranjith, and Clem Tisdell. 2003 Comparison of Rural and Urban Attitudes to the Conservation of Asian Elephants in Sri Lanka: Empirical Evidence. Biological Conservation 110: 327-342. Baratay, Eric.Â 2004 Problems of Regulation of Islamic Slaughtering in Italy: Note on an Empirical Study. Sociologia del Diritto 31: 77-98. Barbra, B. E.