Contending with Criticism: Sensible Responses in an Age of Advocacy

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Abstract

The modern environmental advocacy emerged in the 1960s in response to highly visible examples of environmental degradation such as air and water pollution, extinctions of animals and plants, and major ecosystem disruptions caused by logging, mining, dam building and mechanized agriculture. More recently, advocacy has been extended to include global concerns related to the environmental impacts of expanding human populations, widespread poverty, global climate change and unprecedented losses of biodiversity. The worldwide impact of environmental advocacy groups has increased dramatically in the recent past because of improved methods of communication, widespread media access and a large infusion of financial resources. For 15 years these groups have criticized specific sectors in aquaculture, but within the past 5 years they have begun to actively target aquaculture as a collective activity. The reasons for this shift in criticism range from legitimate identification of potential problems in aquaculture to fund-raising efforts by advocacy groups based on opinion polls of their memberships. Given these current trends, it appears that this criticism will not diminish in the future and has the potential to influence public opinion, consumer behaviour, and the activities of policymakers and regulatory agencies. Given these realities, it is incumbent upon those involved in aquaculture to gain an appreciation of the importance of responding sensibly to criticism. This includes developing an understanding of the relevant issues, communicating effectively with and through popular media, becoming familiar with the goals and tactics of advocacy groups, and increasing involvement in the formulation of policies and regulations as individuals and representatives of groups.

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The Nature of Environmental Advocacy

The 21st century presents widespread access to rapid and pervasive communications media. There are many groups utilizing the media to carry their message to the public, policymakers and politicians. As with other topics of broad societal concern, environmental issues have stimulated the development and proliferation of advocacy groups during the past 40 years. Environmental issues were first brought clearly to the attention of the general public through the best-selling book *Silent Spring* (Carson, 1962), a linkage of popular media and the environmental movement that continues to this day. Environmental advocacy has shifted to a professional activity with many participants. In fact, there were more than 23,000 environmentally related non-governmental organizations (NGOs) active worldwide in 1998 (French, 2000). These organizations can be quite large. For example, the World Wide Fund for Nature has almost 5 million members in more than 90 countries, and Greenpeace claims 2.5 million members worldwide (French, 2000). These NGOs have developed powerful organizational networks employing the internet and traditional media to advance their environmental agendas by scrutiny and high-profile criticism of actions within the private and public sectors.

Within the last decade, criticism of aquaculture activities by environmental advocacy groups has escalated rapidly, evolving in format as well as in content. During the last 5 years, individuals representing these groups have begun targeting aquaculture as a collective activity, rather than directing criticism to specific sectors (Goldburg and Triplett, 1997). Prior to this, criticism was more focused on concerns with the environmental impact of coastal shrimp farms in tropical countries and, later, nearshore salmon operations in temperate waters (Naylor *et al.*, 1998).

Much of the criticism of aquaculture by NGOs began as opinion pieces in news media or as information provided by specific advocacy groups. Gradually this material began entering scientific literature as news items and recently has shifted into the arena of scientific review and technical articles, and special reports for commissions (Goldburg *et al.*, 2001) and scientific societies (Naylor *et al.*, 2001). In effect, NGOs have become clearinghouses for information critical of aquaculture. High-profile articles are now regularly seen in leading scientific journals and popular media that criticize the past and potential environmental effects of aquaculture and the use of genetically modified aquatic organisms (Table 18.1). These articles are often recycled and appear in multiple publications (Naylor *et al.*, 2000, 2001), a practice considered ethically unacceptable for publication of primary scientific data (Resnik, 1998).

Aquaculture is growing rapidly and has been associated with practices and impacts that warrant criticism. The rapid growth of aquaculture has attracted attention and has been used to suggest that greater trouble is on the horizon. Various groups have adopted attacks through popular media as a method to bring about changes in popular opinion and regulatory policy. This approach is not discouraged by the media because sensational accusations,

Table 18.1. Recent publications critical of aquaculture.

Title	Source
Marine Aquaculture in the United States	Pew Oceans Commission, 2001
Effects of aquaculture on world fish supplies	*Issues in Ecology*, 2001
Will souped up salmon sink or swim?	*Nature*, 2000
Effects of aquaculture on world fish supplies	*Nature*, 2000
Nature's subsidies to shrimp and salmon farming	*Science*, 1998
Murky Waters: Environmental Effects of Aquaculture in the United States	Environmental Defense Fund, 1997

controversy, and polarized debate are considered to be newsworthy simply for their mass appeal rather than scientific validity. As a result, policymakers and the seafood-consuming public are unable to make informed decisions based on a full set of considerations. Aquaculture producers, leaders of aquaculture organizations and research scientists should expect to continue to receive criticism and would be wise to take steps to improve their ability to respond to and benefit from it.

There are many factors that make aquaculture an easy target, especially for environmental advocacy groups. Although the diverse activities within aquaculture are not centrally organized and encompass a broad diversity of organisms, geographic locations and levels of intensity, it is often construed as a single large industry, culpable as a whole for a wide variety of problems. Critics of the aquaculture industry can make it appear large, formidable, reckless and, by implication, can blame all aquaculturists for the activities of a minority. Such an industry can be demonized easily and is without the ability to defend itself, lacking, for example, the lawyers and media consultants of large corporations. Thus, when criticized as a collective aquaculture industry, it cannot respond as such, and when participants within various aquaculture sectors make good-faith efforts to correct problems, critics outside aquaculture are often poised to claim credit for those improvements.

The current situation has resulted in an adversarial climate that often leads to polarized deadlock and failure of issue resolution. To address this, we provide some suggestions below for those involved in aquaculture to respond to criticism by advocacy groups. These suggestions focus primarily on responses and responsibilities at the level of the individual, with some mention of responses at the organization level. Such responses might take the form of one-to-one discussions with critics, debate in a public forum, press releases, scientific publications to address criticisms or interviews with the media. These points have coalesced from discussions stimulated by a presentation addressing this topic at the annual meeting of the World Aquaculture Society in Orlando, Florida (Tiersch and Hargreaves, 2001).

Suggestions for Sensible Interactions

Repond from the perspective that criticisms and solutions must be based on a comprehensive and balanced view of the total problem

The short message length emphasized in the current age of 'sound bite' media makes it difficult to present comprehensive and balanced viewpoints. Indeed, messages are often edited for maximum effect rather than greatest accuracy (Rybacki and Rybacki, 2000). This is a difficult arena for scientific discussion and the agenda of issues is often controlled by those who deliberately seek access to media or have the largest budgets.

If possible, when responding to criticism, call attention to biased assertions that lack a realistic context in order to discourage this form of attack. Consider, for example, the formulation of a written response to recent articles critical of fish meal use in aquaculture (e.g. Naylor *et al.*, 2000, 2001). An effective response should clearly point out that it would be scientifically irresponsible to advance the perception that aquaculture is a significant threat to the health of ocean fisheries without providing a comprehensive and balanced account of all the major factors affecting those fisheries. Aquaculture activities have a much smaller impact on ocean fisheries than do the larger-scale effects of widespread development and exploitation of coastal areas, poverty and lack of economic alternatives, deforestation, dam construction and other habitat alterations, pollution, international commercial fishing and associated bycatch, and a growing consumerism fuelled by the rapid expansion of the global economy. A scientific approach to this topic would identify each hazard, the magnitude of its effect, and provide an explicit assessment of the probability of occurrence (i.e. risk) of that hazard (as would be required, for example, for publication of a scientific paper on the carcinogenicity of a particular substance). Responses to criticism of this sort should insist that critics explain their selective presentation of information. For those within aquaculture, numerous references are available that provide examples of a comprehensive view of the numerous claimants to aquatic resources (Reisner, 1993; Lichatowitch, 1999; de Villiers, 2000).

Respond to criticism with clearly presented, broad-based arguments

When receiving criticism it is easy to focus on the details. Scientists intuitively respond to criticism solely with facts and data, assuming that such a response will persuade critics to accept the validity of their position. Advocacy groups commonly counter such responses with additional facts and data, and then shift to new issues that elicit additional responses. Regulators and other decision-makers attempting to sort out the facts of a debate often dismiss such situations as a case where the 'experts disagree' and therefore neutralize

one another's arguments. It would be wise to remember that we all tend to disregard details or highly technical information that are outside our own sphere of interests. Do not waste opportunities for communicating effectively by burying your message in details and technical jargon.

Responding from a broader vantage point that addresses the centre of an issue rather than its periphery can be effective. For example, it would be a mistake to argue the exact area of mangrove wetlands converted to shrimp farms in Thailand while ignoring the overall global demands placed on these areas. There are many sources of information available on broad-based topics of relevance to aquaculture, such as sustainability (Hart, 1997), globalization (Friedman, 1999), and the value of natural capital and ecosystem services (Costanza *et al.*, 1997a,b). The annual and special publications by the Worldwatch Institute are especially useful in this regard (e.g. Brown *et al.*, 2001).

In responding to criticism, recognize that information can be used to achieve different ends

It is an unfortunate reality that arguments are advanced by selective presentation of facts or perceptions of reality. Similar to product advertising, specifically targeted distortions of reality (product claims) are used to 'sell' a product, in this case a world view that advances the agenda of a particular environmental advocacy group.

Bear in mind that remarkably divergent conclusions can be formed from the same data. For example, a recent book by Peter Huber (1999), entitled *Hard Green: Saving the Environment From the Environmentalists: a Conservative Manifesto*, represents a politically conservative reworking of traditionally liberal environmental concerns. Given this 'spin doctor' reality, carefully consider and anticipate the ways in which critics might misconstrue and take advantage of any statements made in response to criticism.

Refer to specific sectors rather than reinforcing the misconception of the existence of a collective aquaculture industry that is operated, regulated and culpable as a single entity

As a precedent for this, consider that aquaculture, which has been defined as 'the propagation and rearing of aquatic organisms in controlled or selected environments' (Goldburg and Triplett, 1997), must have a corollary in the propagation and rearing of terrestrial organisms in controlled or selected environments. Accordingly, we should lump the farming of turkeys, swine, cattle, cotton, rice, soybeans, tomatoes, bananas and orchids as a collective called the 'terraculture industry'. This concept of terraculture does not reflect a real-world regulatory domain or a single business entity. Similarly, the

production of pearls, salmon, ornamental carp, crawfish, bait minnows and seaweeds does not comprise a single business entity. These activities constitute separate sectors and should be referred to as such. It is a large leap from the general term aquaculture to the misleading and imprecise term aquaculture industry. This argument also extends to references to the aquaculture industries of particular geographic areas. Reference to the specific aquaculture industries of Louisiana or Thailand is more accurate than combining them. This is sometimes difficult to avoid, however, given that members of small aquaculture industries are often tempted to pool their resources for specific efforts. This desire to display strength in numbers has advantages and disadvantages that should be considered before such actions are taken. Realistically, if aquaculture is to be criticized as a large unified industry, it should seek to develop a collective identity and organization to reap the benefits accorded to such an industry. This could include utilizing the services of media consultants and providing a positive recognition of aquaculture with the public, regulators and politicians.

Be familiar with the role of aquaculture in economic development, especially in developing countries

Aquaculture has many well-known values, which include generation of income and employment, protein production, and creation of foreign exchange. Less-appreciated values of aquaculture include the potential for generating economic development (Pullin *et al.*, 1993) and alleviating poverty (Hambrey *et al.*, 2001a,b). Aquaculture can serve as the nucleus or catalyst for economic development. For example, when fish farms are constructed, ancillary businesses become necessary to support the new industry, providing employment. These activities, with proper support and community acceptance (Harrison and Huntington, 2000), can be integrated with existing infrastructure to strengthen local markets and communities (Edwards, 2000), and to reduce demands on the local environment.

Know your critics, their methods and their goals

Environmental advocacy groups are well organized and well financed (Table 18.2). They are often intent on shaping political policy and public opinion rather than engaging in objective scientific debate. Such groups frequently take extreme positions in order to force movement on issues towards the middle. A common tactic is to burden the opposition with excessive paperwork and litigation, and to overload research and regulatory institutions with accusations that take minutes to formulate but years to resolve. For example, suggesting at a press conference that farmed fish contain toxic contaminants initiates a chain of actions that can waste limited resources in pursuit of a

Table 18.2. Annual income for the year 1999 for different organizations. These values were compiled from website postings in January 2001.

Organization	Income	Website
The Nature Conservancy	$774.9 million[a]	www.nature.org
Greenpeace International	∈ 126 million[b]	www.greenpeace.org
World Wildlife Fund	$111.8 million[c]	www.worldwildlife.org
National Audubon Society	$69.2 million	www.audubon.org
Sierra Club	$46.5 million	www.sierraclub.org
Environmental Defense (Fund)	$31.4 million	www.edf.org
Natural Resources Defense Council	$30.6 million	www.nrdc.org
People for the Ethical Treatment of Animals	$17.5 million	www.peta.org
World Aquaculture Society	$0.5 million	www.was.org

[a]Total support and revenue for 1999.
[b]Posted in euros; other values are in US dollars.
[c]Operating revenue for 2000.

definitive solution to the perceived problem. In some cases, non-violent civil disobedience or even violence are used to force change. Individuals and groups directly associated with aquaculture are typically unfamiliar or uncomfortable in responding to these tactics, yet knowledge of the methods employed by advocacy groups can facilitate the formulation of effective responses and proactive measures.

An informative five-part series of newspaper articles by Tom Knudson entitled 'Environment, Inc.' appeared recently (22–26 April 2001) in the *Sacramento Bee* newspaper (the articles can be viewed on the newspaper website at www.sacbee.com). These articles reveal the evolution of a corporate mentality in the environmental movement, sustained by aggressive fund raising and an 'ends-justify-the-means' mentality. Grassroots advocacy has yielded to an environmental defence industry that in 1999 took in an average of US$9.6 million a day (a doubling of 1992 levels) from individual contributors, companies and foundations (Knudson, 2001). In 2000, The Nature Conservancy was listed as the ninth largest non-profit organization in the United States (from their website at www.nature.org). There is little question that advocacy groups can generate substantial revenues, well in excess of aquaculture organizations such as the World Aquaculture Society (Table 18.2). One of the strongest approaches to addressing biased or undeserved criticism is to become familiar with the financial practices of the particular advocacy group that is making the claims. Being prepared to provide accurate information concerning how donations are used for fund-raising mailshots (sometimes referred to as education), salaries of top executives, and impressive office buildings rather than assisting the environment can shift the moral authority away from disreputable groups. Financial information and

evaluation of the operations of non-profit organizations in the United States are available through watchdog groups such as the National Center for Charitable Statistics (www.nccs.urban.org) and the American Institute of Philanthropy (www.charitywatch.org).

Recognize legitimate criticism

Advocacy groups can provide a valuable service by acting as an impartial watchdog of environmental issues and calling attention to legitimate concerns (e.g. Roed, 2001). With respect to aquaculture, a number of authors have addressed the potential for fish farming, the so-called blue revolution, to avoid the past mistakes of the green revolution (e.g. McGinn, 1998). It is essential that we all recognize, evaluate and minimize the potential negative consequences of our activities. Indeed, there are good business reasons for this, including improved profitability arising from increased efficiency and innovation (e.g. Porter and van der Linde, 1995; Hawken *et al.*, 1999; Bliese, 2001). Potentially negative social and environmental impacts of aquaculture can be minimized through the adoption of codes of conduct, which provide guidelines for the development of voluntary systems of management (e.g. Boyd, 1999a; Boyd *et al.*, 2001). Codes are implemented through a systematic, integrated collection of better (best) management practices (BMPs), representing creative, locally appropriate solutions for the improvement of social and environmental performance.

In addition, researchers as well as farmers need to ensure that research goals and culture practices are truly defensible, especially for issues such as the use of non-native species including black carp (Ferber, 2001) and genetically modified organisms (GMOs). It makes particular good sense to carefully evaluate the broad range of issues associated with GMOs (the so-called gene revolution) before investment of time and resources, and to be aware of the considerable controversy that surrounds this topic in the scientific community (e.g. Reichhardt, 2000) and in the popular media (e.g. Nash, 2000).

Do not shift blame to other sectors of aquaculture to deflect legitimate criticism

It is not difficult to find examples of specific mistakes that have been made as aquaculture industries have developed. It is common for critics to cite specific (often past) actions to make broad-brush indictments of aquaculture industries in general. It would be advisable when responding to criticism of this type to point out inaccurate generalizations where appropriate, and to require critics to document their claims. Regional or commodity-based aquaculture associations can play an important role in avoiding poor practices by disseminating practical information and encouraging responsible behaviour. Well-managed

businesses and industries are self-correcting. Problems are identified and steps are taken to minimize or eliminate them. In the long run, this is a better way to handle criticism than diverting blame elsewhere. Deflecting criticism to other industries is a defensive posture that suggests guilt and a lack of responsible behaviour. In addition, as long as aquaculture is viewed as a single industry (as described above), all sectors will suffer from criticism of a particular sector.

Learn how the media can be used as a conduit for responses to criticism

Environmental advocacy groups are sophisticated in the use of popular media to achieve their goals. Until recently, members of the aquaculture community have generally not had much interaction with members of the media. However, given current and future criticisms, understanding the role of the media and becoming comfortable with their capabilities to communicate success stories and responses to criticisms will become increasingly important. Many environmental advocacy groups hold training sessions with the explicit intention of improving the ability of their staffs to spread their messages. Some Land Grant universities hold similar sessions for their extension agents and scientists. Although communicating through radio or television does not allow for comprehensive review of issues, producers, processors, marketers, extension agents, scientists and leaders of aquaculture organizations who learn how to communicate their message succinctly can effectively respond to criticisms by advocacy groups through those media.

An Example for Responding to Environmental Advocacy

Environmental advocates and NGOs often argue that aquaculturists should 'farm down the food web' to emphasize the culture of herbivorous fishes (Goldburg and Triplett, 1997; Naylor *et al.*, 2000, 2001). Similarly, advocates base arguments in opposition to certain forms of aquaculture on the protein equivalency or ecological footprint of those activities. These arguments can be refuted on several grounds, based on the broad principles of response described above.

These criticisms typically address the feeding of plant or animal protein to livestock or fishes instead of making that protein available for direct human consumption. First, these arguments reflect criticism of animal agriculture in general, which is a broader issue, and often are based on unrealistic requirements such as the avoidance or elimination of meat in human diets (e.g. Singer, 1975). With respect to aquaculture, these criticisms typically address the feeding of plant and animal protein to shrimp and carnivorous fishes. It is argued that herbivorous fishes would not require protein inputs in feeds and that culture of such species would reduce demand for fish meal (see

Chapter 16), protecting ocean fisheries. However, critics fail to recognize that the market for fish meal is global and that restricting its use in aquaculture feeds would only shift demand to other animal agriculture sectors. Critics also argue that the fish incorporated into aquaculture feeds would be better used for human consumption. This assertion ignores the weak market demand for direct consumption of small pelagic fishes.

While culture of food fish low on the food chain has an intuitive appeal based on principles of trophic dynamics, aquaculture is an economic activity that responds to market demands. Carnivorous fishes and shrimp are farmed because a market demand exists for those products. Without changes in consumer preferences, satisfaction of requirements of a politically correct aquaculture enterprise will be difficult. Although production of herbivorous fishes to augment local protein supplies is an appropriate goal in developing countries, it is not a reason to do away with the culture of omnivorous or carnivorous species. A blend of aquaculture production activities, ranging from herbivorous to carnivorous species cultured in extensive to intensive production systems, will be able to contribute to the satisfaction of local and global market demands for a broad range of seafood products. It is important when responding to arguments of this sort, to insist that critics provide realistic assessments of alternatives to animal agriculture, and that they explicitly disclose their views on issues such as animal rights and the consumption of meat.

How should responses be made? There is usually no need to respond directly to advocacy groups – it is more effective to make points directly to the general public or other interested parties. This is because individuals are not in a position to win an argument with advocacy groups, whose representatives are not going to change their perception of an issue based on persuasive argumentation. Thus, it would be a mistake to be lured into a debate. When addressing an audience it is important to know the message that you wish to deliver, to state it, and to come back to it. This is known as staying on message and we see it practised daily on television by politicians and spokespersons. This reasoning also works in reverse. It is important to recognize and understand the message being presented by an advocacy group. For example, they often argue based on the possibility (or perception) that a particular event or situation could occur, rather than addressing the actual probability and risk of occurrence. In this way individual concerns, such as the status of ocean fisheries, the risk of disease transmission from cultured fishes, or the potential ecological consequences of GMOs, serve as vehicles to deliver their broader message, that aquaculture threatens the well-being of the planet and its inhabitants.

Forms of Interactions with Advocacy Groups

Broadly speaking, environmental advocacy occurs at several levels, depending on the size and interactions of the organizations involved (Kirn, 2000). Large,

transnational NGOs with broad-based agendas have become increasingly active in the courts, attempting to achieve objectives through litigation. Small, local environmental groups tend to respond when specific issues of local concern inspire organization and direct action from a grassroots level. As an example, a large environmental organization might advocate complete cessation of construction in mangrove areas, but a local environmental organization might advocate mangrove conservation in a particular area, while accepting development elsewhere in recognition of potential employment opportunities fostered by aquaculture development projects. Although large environmental organizations often cannot be ignored, particularly when opposition to a project is brought into court, sincere and responsive attention to the legitimate concerns of local environmental groups can go a long way towards defusing potential conflicts. Also bear in mind that the NGO community employs flexible and overlapping networks in response to various issues (French, 2000). While this allows rapid and widespread dissemination of information and planning of activities, it also sometimes blends the missions of various organizations. For example, it is not unusual to see statements made by People for the Ethical Treatment of Animals, a group formed to oppose agricultural and biomedical uses of animals, that address ecological issues, an area outside its original mission.

Responses to criticism can be made at several levels. At a personal level, responses can be made as a private citizen; in a professional capacity, responses can be made as an individual or as a member of an organization. While it is important always to have a scientific basis for arguments, it is arguably a major mistake to confine your responses only to the available data. This is especially true when advocacy is cloaked in science to present a non-scientific viewpoint, a standard practice of groups such as those that oppose teaching of Darwinian evolution (Gould, 1991; Coyne, 2001). To be effective, responses may need to be made for popular audiences outside the scientific and technical literature.

Occasionally, direct action or litigation by environmental advocacy groups in response to specific actions will lead to stalemate and polarization. In those instances, it may be necessary to implement formal methods of conflict resolution. These methods have been developed to resolve disputes within the workplace or between corporations and unions, but the techniques are applicable to disputes concerning environmental issues. The primary goal of dispute resolution is to develop a win–win solution, often through the employment of a mutually agreeable neutral party. Common dispute resolution processes include arbitration and neutral evaluation, mediated through an ombudsman or peer review. The neutral party can assist negotiations by facilitating identification and discussion of common interests and points of disagreement. Further information is available from sources such as the US Institute for Environmental Conflict Resolution (www.ecr.gov) and the Conflict Prevention and Resolution Center (www.usda.gov/cprc) of the US Department of Agriculture.

In a recent plenary address to the Aquaculture America Conference in Tampa, Florida, USA (Boyd, 1999b), it was suggested that individuals become more active in the political process. Although members of the aquaculture community are often uncomfortable in this role, representatives of environmental advocacy groups with little formal training in aquaculture have been active in this arena. Advocacy groups have effectively driven the agenda on a broad range of environmental issues. As an example, the US Environmental Protection Agency (EPA) was sued by the Natural Resources Defense Council, an environmental NGO active in the courts, for failure to enforce the 1972 Clean Water Act. As part of a consent decree that arose from the court case in the early 1990s, the EPA agreed to a timetable to review effluent limitation guidelines for industries that had not been scrutinized to that point. Publication of the *Murky Waters* report (Goldburg and Triplett, 1997) called specific attention to US aquaculture and suggested that the EPA initiate a review of effluent limitation guidelines for aquaculture. The EPA initiated rule-making activity in January 2000 that has led to institution of an aquaculture-wide questionnaire designed to disclose comprehensive financial information of aquaculture producers as an initial step in formulating regulations. This is an example of how environmental advocacy groups have affected the policy arena. There are many potential outcomes of this process, including those that may be excessively burdensome to producers and others, that would yield only modest environmental protection. Therefore, timely and effective responses to advocacy groups are necessary for rational, science-based establishment of policies and regulations.

The role of professional aquaculture organizations in providing responses to criticism by advocacy groups is not clearly defined. It has been argued by the Executive Committee of the World Aquaculture Society (WAS) that involvement should be limited to educational, scientific and technological issues as an 'apolitical organization with the mission of generating and disseminating unbiased, science-based information' (Losordo *et al.*, 2000), although it has also been pointed out that the mission of WAS includes disseminating other (non-technical) information, debating of important issues, and promoting the advancement of aquaculture (New, 2001). This is in contrast to the American Fisheries Society (AFS), which has established a position statement providing specific advocacy guidelines for its membership (available on the AFS website at www.fisheries.org). There are organizations within aquaculture with clear advocacy roles, such as the Global Aquaculture Alliance (www.gaalliance.org), which is an international, non-profit trade association dedicated to advancing environmentally responsible aquaculture. The by-laws of this organization direct it to advocate aquaculture as an answer to global food needs and to educate producers, consumers and the media, thus providing a needed voice in environmental issues. All told, it is apparent that interaction with advocacy groups is inevitable for those in aquaculture and that, at a minimum, distribution of pertinent information will be necessary. Otherwise the public, regulatory agencies and policymakers will probably receive a

large portion of their information directly from environmental advocacy groups.

Conclusions

Why are advocacy groups opposed to aquaculture? Well, in addition to the points made above, including the fund-raising issues that are part of today's world (e.g. the need to stay in the headlines and on the television screen), there are deeper philosophical reasons. A core concept of the environmental movement is the precautionary principle, which basically states that it is wise to avoid unnecessary risk (Huber, 1999; McGinn, 2000). In practice this means that it would be best to restrict or prevent activities that could cause long-term or irreversible harm, even in the absence of convincing scientific data. This principle is biased towards slowing or stopping the development of new activities, and shifts the burden of proof from environmental advocates to practitioners such that new activities, like aquaculture, must show that they will not be a problem in the future. This is in contrast to the situation for established industries – detractors must prove that the established industry presents a problem. Of course, newer industries also lack the financial and political resources of groups such as logging, mining and petroleum extraction interests and large chemical corporations. It is easier to restrict or stop aquaculture projects, despite their much smaller environmental risk, than it is to attempt to control more damaging established activities. Thus, opposing aquaculture development is viewed by advocacy groups as applying an ounce of prevention now instead of the pound of cure that would be required later.

There are some negative outcomes that could arise from the intensified efforts of NGOs to publicize ecological distress and to criticize corporations and agricultural industries, including those of aquaculture. First, the general public can become desensitized to environmental issues owing to overexposure. Aggressive fund-raising by direct mail may already be causing this to happen, producing so-called compassion fatigue. Second, biased and unfounded attacks by environmental advocacy groups will eventually be recognized as such. When this happens and is linked to revelations concerning high-powered fund-raising efforts – which annually produce enough paper to encircle the Earth more than twice (Knudson, 2001) – an emergent corporate mentality, and sky-high salaries for top executives (more than US$200,000 for the top ten groups), the public could react negatively to advocacy groups. The negative reaction would be intensified if the public realized that higher prices in the supermarket for seafood and other commodities were caused by the actions of NGOs. Third, if the dire warnings of NGOs are not followed by global ecological collapse and extinction of wolves, whales and pandas, the general public could come to view NGOs as the watchdogs who cried wolf. This would be a serious blow to their credibility and that of the environmental movement in general. Indeed, conservative groups have begun to attack environmentalists on these

grounds (see Huber, 1999). Because the public generally makes no distinction between environmentalists and ecologists, there could be a loss of credibility for environmental scientists as well. Fourth, the activities of NGOs and the possible outcomes described above could alienate colleagues of environmental advocates within the scientific community, who would otherwise support a responsible, science-based environmental agenda.

Thus, alone or in combination, desensitization of the public, corporate hypocrisy, loss of credibility and alienation of sympathetic members of the scientific community could weaken the ability of NGOs to protect the environment. Indeed, by diminishing the economic opportunities afforded by aquaculture worldwide, advocacy groups could indirectly cause environmental damage in economically disadvantaged areas because of a lack of alternatives for local people. Ironically, these actions by advocacy groups would compromise the sustainability of their own environmental defence industry and ultimately the sustainability of the natural resources they profess to protect.

Finally, it is important to remember in any interaction that issues can quickly become polarized, leaving factions on either side of a broad divide. Once polarized, it is difficult for the factions to re-establish common goals and to work together. This is especially true for issues with strong emotional connections or with heated media coverage. Accordingly, we should strive to act professionally while maintaining a factual, comprehensive and balanced view of issues. Realistically, the best approach to dealing with advocacy groups is to devote effort in gaining a strong personal understanding of the relevant issues, and to be proactive in addressing problems and communicating solutions. This has been emphasized, for example, for interactions with leaders of the animal rights movement to avoid embarrassment of ill-prepared scientists and the scientific community (Macrina, 2000). It is ill-advised to allow advocacy groups to set the agenda and to control the debate on aquaculture-related issues. There are many additional sources of information concerning broad issues beyond those cited in this chapter. An increased awareness of social, economic, ecological and political issues will allow those involved in aquaculture to be proactive and avoid taking a defensive, reactionary position. Indeed, it is likely that aquaculturists and environmental advocates share values at the heart of most issues, and it is the tactics used in addressing the inappropriate actions of a minority within aquaculture and environmental advocacy that drive groups apart.

Addendum

The relationship between aquaculture development and environmental advocacy groups has been affected by recent events. First, the pendulum of moral high ground in environmental issues has swung rapidly to the right in the past months. A number of recent publications (including those cited above) have confronted advocacy groups with compelling evidence of misrepresentation or

distortion of facts to create a false impression of impending ecological collapse to fuel advancement of their environmental agenda. This backlash has provided the ammunition for a political battle. A book by Bjorn Lomborg (2001) is being heralded by the media and opponents of advocacy groups as a definitive work identifying the fallacies put forth by environmentalists, complete with more than 2900 notes and sources. It is clear that advocacy groups will need to regroup and do a better job of using creditable facts and figures. Thus, the backlash has created a demand for accountability.

Second, the declaration of a war on terrorism in the aftermath of the attacks of 11 September has reorganized national priorities and diminished the importance of environmental issues and advocacy groups. Although the issues that stimulated environmental advocacy remain, the context of operation and activity prioritization have changed. Downturns in the US and world economy, and shifts in charitable contributions to disaster relief funds are likely to reduce donations to advocacy groups, thereby forcing the groups to reconsider their agendas and approaches. It would be appropriate to continue to evaluate case studies of responding to environmental advocacy by discussing sensible responses to claims (e.g. such as damage to ocean fisheries by inclusion of fish meal in aquaculture feeds) and to remain informed of advocacy group activities to shape aquaculture regulations, policies and perceptions.

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