

AFS and Aquaculture—Addressing the High Stakes of a Sustainable Seafood Supply

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INTRODUCTION

The relationship between fisheries and aquaculture is a complex one: cooperative, adversarial, integrated, or isolated depending on the situation. The roles of the American Fisheries Society (AFS) and other stakeholder groups in supporting aquaculture are similarly complex. Although AFS has its historical roots in aquaculture, starting in 1870 as the American Fish Culturists' Association (AFCA), there are those who question the role of AFS in supporting the development of commercial aquaculture. From the early days to the present, the primary aquaculture constituency of the AFCA and now the AFS Fish Culture Section (FCS) has been in the public sector, supporting

recreational and commercial fisheries or, increasingly, restoring threatened or endangered species. If we primarily represent fisheries professionals working with state and federal agencies, what is our responsibility and interest toward the development of the commercial aquaculture industry? In this article, we explore the following:

- Why should AFS members be engaged in scientific research, policy development, management, and development of commercial aquaculture?
- The evolving roles of federal agencies, industry organizations, and professional societies who are involved in addressing aquaculture's potential and challenges.
- The role that AFS and its members play in fostering the sustainable development of commercial aquaculture.

AFS currently represents many who culture fish in both the public and the private sectors and a great number of fisheries professionals who are involved in fish physiology, genetics, nutrition, conservation, economics, ecology, and many other allied fields critical for advancing common fisheries and aquaculture interests. Even those fisheries professionals with no direct involvement in aquaculture per se undoubtedly have an interest in the biological and economic interactions between fisheries and aquaculture and ensuring that the use of wild and farmed fishes is governed with an eye to sustainability, ecosystem management, and minimizing adverse impacts from either sector.

THE FOOD IMPERATIVE: STATUS AND PROJECTIONS FOR WILD CAPTURES AND AQUACULTURE

In 2010, the Food and Agriculture Organization (FAO 2010) of the United Nations indicated that for world fisheries and aquaculture it is "... encouraging to note that good progress is being made in reducing exploitation rates and restoring overfished fish stocks and marine ecosystems ..." but it also notes that

... the declining global catch in the last few years, together with the increased percentage of overexploited, depleted or recovering stocks and the decreased proportion of underexploited and moderately exploited species around the world, strengthens the likelihood that the production of wild capture fisheries will not be able to increase. ...

This scenario of stable or decreasing seafood supply from wild fisheries presents a serious challenge in relation to projected increasing global demand for seafood. It has been estimated that food production will have to grow 70% by 2050 in order to keep up with population growth and increased per capita consumption (FAO 2009b). Seafood is an important source of highly valued protein, and the need to increase supplies is a major element of the global food security challenge. Global per capita consumption of seafood has broken the previous year's record for more than 20 consecutive years and is currently at an all-time high, topping 17 kg per person per year (FAO 2009a). Given current rates of human population growth and the state of world fisheries, the contribution of aquaculture to global protein demand and food security will continue to increase. Today, approximately half of the seafood that people consume is farm raised. Assuming that per capita consumption remains steady, aquaculture production must nearly double by 2030 just to keep up with population growth. The additional seafood we will need in the future could be provided by aquaculture operations or by capture fisheries. Aquaculture could provide the additional seafood needed, but placing more demands on wild capture fisheries would have serious, adverse consequences for already strained and limited wild stocks. Taking a broader view of protein production, aquaculture is also likely to play an increasing role because it is one of the most resource-efficient ways to produce protein, generally much more so than terrestrial animal production. Fish and shrimp are very efficient at converting feed-grade protein into food-grade protein, and mollusks and algae draw their nutrients from the aquatic environment, often increasing existing ecosystem services (Hall et al. 2011; Torrissen et al. 2011).

THE STATE OF U.S. FISHERIES AND AQUACULTURE—THE NEED FOR LOCAL SEAFOOD PRODUCTION

The case for environmentally responsible growth and development of aquaculture in North America is compelling. More than 328,000 MT of food fish were raised in the United States in 2009 (National Oceanic and Atmospheric Administration [NOAA] 2011a), helping to meet the domestic demand for seafood. However, domestic aquaculture production is dwarfed by the volume of seafood the United States currently imports from more than 150 different countries. For example, in 2009, over 431,000 MT of salmon, tilapia, and trout alone were imported. On a global scale, the United States is the world's second largest importer of seafood and ranks third in wild capture fishery landings but ranks 14th in aquaculture production (FAO 2010). Similarly, Canada ranks 26th among world aquaculture producers, and although the industry is growing, farmed fish represents only 14% of total seafood production in the country (Department of Fisheries and Oceans, Canada [DFO] 2012). In the past, the value of U.S. and Canadian seafood imports and exports added up to a seafood deficit of roughly US\$8 billion per year (FAO 2010), but more recent data (NOAA 2011b) indicate that the U.S. seafood trade deficit alone now exceeds US\$10 billion per year.

This is worrisome because China and other growing economies are quickly becoming net importers of seafood as their populations grow and become more affluent, which in turn will make imported seafood less available and more expensive to North American consumers.

American and Canadian reliance on imported seafood is also of concern to some, given that imported products could come from countries that may not have the same rigorous environmental and food safety standards and regulations as the United States and Canada. Food safety has always been of utmost importance to North American consumers, and seafood importers have financial and other incentives to meet U.S. food safety requirements. However, a recent Government Accountability Office (GAO 2011) report noted a number of food safety concerns with imported seafood. In addition to following food safety requirements, food retailers increasingly seek wild and farmed seafood products that meet sustainability criteria associated with environmental, social, and ecological concerns. For North America, it is clear that domestic production must grow to fill the widening "seafood gap." Though a similar seafood trade deficit is reported for Europe, other regions report sizable seafood value surpluses, either through increasing harvest pressure on wild fisheries or through investing more in aquaculture development. Another reason to produce more seafood in North America is the creation of local jobs. Imported seafood involves North American jobs tied to exports of investment, trade, equipment, feed, processing, transport, and food services, but we are missing the all-important local production part of the value chain. Jobs in commercial aquaculture could be especially important to traditional coastal seafood communities, many of which have seen declines in employment in commercial fishing.

FISHERIES AND AQUACULTURE—A LONG HISTORY AND TRADITION OF CONNECTIVITY

Aquaculture overlaps with fisheries due to the common medium of water, technologies, and species involved. Aquaculture and fishing are part of a spectrum of technologies to produce seafood, and some seafood production methods are hybrid technologies; for example, hatchery-supported commercial salmon fisheries, tuna ranching (fattening wild-caught fish in nets), and lobster pot fishing, which involves feeding lobsters in traps with herring until they are harvested (Saila et al. 2011). There are interrelated commercial, ecological, and recreational imperatives that coexist within fisheries and aquaculture, and these shared imperatives form the common ground from which both sustainable aquaculture and stewardship of natural resources can grow and flourish. Aquaculture is an important component of many aquatic resource management strategies. In 2004, the U.S. Fish and Wildlife Service (USFWS) and state governments reared more than 20,000 MT of fish (equating to 1.75 billion fish) for fishery enhancement and restoration activities (Halverson 2008). Hatcheries support capture and recreational fisheries, some of which would face collapse

without supplemental stockings. For example, it is common to think of salmon as either wild or farmed. However, not all wild salmon are equally wild. A large share of the salmon returning to North American streams, and a large share of the salmon caught by North American commercial fishermen, are released from hatcheries and are considered ranched salmon (Knapp et al. 2007). In Alaska 49% of the commercial harvest originates in hatcheries as part of the salmon enhancement program (White 2011). Although the FAO (2010) noted that it is difficult to assess the value of stocking in terms of returns and landings, most fisheries management agencies use supplemental stocking as part of comprehensive management plans to maintain and restore commercial and recreational fisheries.

Aquaculture can provide a reprieve from political pressure to overfished wild stocks by providing an acceptable alternate species to take the place of an overfished species. For example, the Striped Bass Emergency Act of 1983 and moratorium on Atlantic striped bass fishing fostered the development of propagation techniques for *Morone* spp. and the creation of the U.S. commercial hybrid striped bass industry. In turn, hybrid striped bass producers met continuing demand for striped bass, deflecting consumer demand and allowing restoration of these fisheries to proceed unfettered.

Aquaculture, fishing, and their hybrids, like any human activity, have environmental effects that need to be identified, addressed, and managed. The research that informs regulations and best management practices in fishing and aquaculture overlaps. In some cases, an ecosystem perspective is required to manage the interrelated effects of aquaculture and fishing. Accordingly, research, innovation, personnel, vessels, equipment, and other assets often flow back and forth between public and private fisheries, aquaculture, and aquatic resource management. Many AFS fishery professionals involved with fish physiology, genetics, nutrition, conservation, economics, ecology, and other allied fields are directly or indirectly supported as a result of commercial aquaculture development. The research funding provided by the U.S. Department of Agriculture (USDA) Regional Aquaculture Centers, NOAA's National Sea Grant College Program and Saltonstall-Kennedy grant program, and the National Science Foundation are examples of such relationships. Conversely, advances that have been made in public hatcheries and research facilities have also benefited fish and shellfish culturists working in the private sector. Just as public aquaculture has led to the development of private aquaculture, fisheries management has led to the development of private fisheries management and consulting companies. It is clear that the give-and-take between public and private entities in fisheries and aquaculture is fluid.

A SHOAL OF STAKEHOLDERS

Fisheries and aquaculture are not distinct entities, nor are they two sides of the same coin. Both represent a range of technologies that can be used for fish production and restoration of species and habitats. Fisheries and aquaculture and the various stakeholders associated with them are more like fish

in a shoal. Schooling fish move collectively in a single direction in a coordinated manner, whereas shoaling fish behave somewhat independently but nonetheless function as a single cohesive unit (Figure 1). Aquaculture stakeholders cannot (and perhaps should not) function as a school of fish but, ideally, they should function as a shoal. Although different stakeholders may have distinct functions or capabilities, only when they function collectively, as a single, adaptive, responsive entity, will they be able to overcome challenges that they cannot address independently. There are numerous entities with a stake in aquaculture and fisheries that could work with AFS and its members in expanded partnerships. Several of these, in particular federal agencies and industry and professional associations, are outlined below in terms of their independent directives and the ways they can partner together.

FEDERAL AGENCIES

In the National Aquaculture Act of 1980 the U.S. Congress declared aquaculture to be “in the national interest, and [that] it is the national policy, to encourage the development of aquaculture in the United States.” Aquaculture is defined broadly in the National Aquaculture Act and subsequent federal policies to comprise both commercial and public (enhancement, restoration) purposes. Several federal agencies are concerned with the different aspects of this mandate, including implementing environmental and food safety regulations, conducting intramural and extramural research, supporting education and training, and implementing international treaty obligations. Several federal agencies are responsible for permitting and enforcement programs (often in association with state agencies) to ensure that aquaculture farms are established, operated, and maintained in a manner that minimizes their environmental footprint and meets water quality requirements and food safety standards. These federal agencies benefit from partnering with AFS and its members to fulfill their stewardship, research, and development missions.

The National Aquaculture Act also set up the federal interagency coordinating Joint Subcommittee on Aquaculture (JSA), currently under the National Science and Technology Council and Office of Science and Technology Policy in the executive branch of government. The purpose of this coordinating body is to increase the effectiveness of federal aquaculture research, technology transfer, and assistance programs. The JSA is chaired by the USDA and cochaired by the Departments of Commerce and Interior.

The USDA's mission is to provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management. U.S. Department of Agriculture program assistance and service priorities are driven by diverse stakeholder input and include aquaculture as one of their focus areas. The Agricultural Research Service (ARS) and the National Institute of Food and Agriculture (NIFA) convene a national aquaculture stakeholder workshop every 5 years specifically designed to gather industry input on research and

extension priorities and needs. The current ARS action plan includes research priorities in genetics and genomics, physiology of reproduction, growth and adaptability, ingredient and diet development, rearing system innovations, and product development.

The USDA focuses on commercial aquaculture development, and most programs and services across a broad array of USDA agencies are available to support the long-term development of this specialized sector of agriculture. These programs include intramural research through the ARS and extramural funding for research, education, and extension through NIFA, including administration of the regional aquaculture centers. The Animal and Plant Health Inspection Service (APHIS) serves both plant and animal aquaculture, especially prevention of diseases and pests, wildlife damage management, inspection of facilities, and import/export of aquaculture products. The Animal and Plant Health Inspection Service takes the lead in collaborating with other federal, state, and tribal agencies in implementing the National Aquatic Animal Health Plan along with the National Marine Fisheries Service (NMFS) and the USFWS. Other USDA agencies offer support and programs for marketing research, statistical reporting on domestic production and imports, national organic standards, risk management tools, disaster assistance, national conservation practice standards, business loan guarantees, and rural development assistance.

As a federal agency under the U.S. Department of Commerce, the NOAA has an active regulatory, management, and research role in aquaculture in state waters (for commercial, enhancement, and restoration purposes) and an emerging role in regulating commercial aquaculture in federal waters. NOAA's NMFS, National Sea Grant College Program, and other offices address aquaculture for food production, stock enhancement, and species and habitat restoration. The NOAA's aquaculture engagement promotes employment and business opportunities in coastal communities; provides safe, sustainable seafood; and complements NOAA's overarching strategy for maintaining healthy and productive marine populations, species, and ecosystems. This mission reflects NOAA's strategy to meet the growing demand for healthy seafood through a combination

of sustainable commercial fisheries and robust domestic aquaculture production. The statutory basis for NOAA's regulatory activities stems from the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, the Endangered Species Act, the Coastal Zone Management Act, the National Marine Sanctuaries Act, and the Fish and Wildlife Coordination Act. Under these laws, the NOAA is responsible for preventing and/or mitigating the potential adverse environmental impacts of marine aquaculture through the development of fishery management plans, sanctuary management plans, permit actions, and permit consultations with the U.S. Army Corps of Engineers and other regulatory agencies at the federal, state, and local levels.

Under the authority of the Magnuson-Stevens Fishery Conservation and Management Act, the NOAA advances scientific knowledge and develops appropriate technologies to support sustainable commercial marine aquaculture and restoration of wild stocks. The NOAA's budget supports aquaculture research at NMFS regional science centers and other NOAA laboratories and several grant programs that fund aquaculture research at universities, nonprofit institutions, and private companies. Aquaculture science activities at NOAA laboratories include work on developing alternative aquaculture feeds; assessing and minimizing environmental impacts; assessing effects of climate change on shellfish production; hatchery research; disease and genetics management; and stock enhancement to help restore depleted species and habitats. The NOAA conducts education and outreach activities, in part through the National Sea Grant College Program, to heighten the public's awareness of issues related to marine aquaculture, and also manages a portfolio of aquaculture-related international activities, including coordination and exchange of information related to research, regulation, policies, and management of marine aquaculture and international treaty obligations.¹

¹ On June 9, 2011, the NOAA and the Department of Commerce released new national aquaculture policies that support sustainable marine aquaculture in the United States. The intent of these policies is to guide Commerce and NOAA's actions and decisions and to provide a national approach for supporting aquaculture (NOAA 2011c).



Schooling fish (left) swim in the same direction in a coordinated manner; shoaling fish (right) swim somewhat independently but nonetheless function as a cohesive unit. Images sourced via Wikimedia Commons.

Under the U.S. Department of the Interior, the USFWS is charged with working with its partners to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The service oversees several aspects of aquaculture, under the authority of the Lacey Act, the Endangered Species Act, and the Migratory Species Act, and also administers provisions of the International Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) treaty.²

The USFWS supports aquaculture via a network of national fish hatcheries, through technology development and transfer, and through fish health and fisheries management activities. The service's fisheries program maintains the largest public aquaculture program in the United States. This system of 70 federal hatcheries cultures aquatic animals and plants in over 30 states and supplies aquatic species to other federal agencies, tribes, and states. National fish hatcheries have the broad mission of culturing fish for restoration programs and for recovery of over 65 federally listed threatened and endangered species, including fish, mollusks, invertebrates, reptiles, amphibians, and plants. Service hatcheries also supply recreational fish to states, tribes, and federal partners.

In support of hatchery propagation and other aquatic management issues, the service maintains a network of facilities and resources that focus on applied research and technology. Knowledge gaps related to propagation techniques, nutrient requirements, genetics, disease susceptibility, and drug effectiveness and safety are all addressed through the USFWS's science mission. The service's six fish technology centers maintain expertise in areas such as physiology, genetics, cryopreservation, nutrition, and feed formulation and conduct basic research in support of public and private aquaculture. The USFWS research productivity has resulted in a number of aquaculture benefits, such as new culture methods, feed formulations, genetic-based testing, and cryopreservation methods. Additionally, nine USFWS fish health centers provide diagnostic and health certification services to the National Fish Hatchery System and their partners and are leaders in the science of aquatic animal diseases in wild and cultured populations. The service's Aquatic Animal Drug Partnership program leads the effort to gain new drug approvals for aquaculture and also administers the National Investigative New Animal Drug Program, which benefits the aquaculture industry and hatcheries alike. Finally, the USFWS plays a service role to the aquaculture industry through its National Triploid Grass Carp Inspection and Certification Program.

INDUSTRY ASSOCIATIONS

In addition to government agencies and universities, some AFS members belong to aquaculture industry associations. In particular, the mission of the National Aquaculture Association (NAA) is to provide a national voice for U.S. commercial aquaculture that ensures its sustainability, protects its profit-

ability, and encourages its development in an environmentally responsible manner. There are also species-specific industry associations (e.g., catfish, trout, striped bass, and shellfish), state aquaculture producer associations (e.g., Maine Aquaculture Association), a supplier association, and others that represent the larger integrated seafood companies such as the National Fisheries Institute and the Global Aquaculture Alliance. Sustainable farm management and regulatory compliance are not just about following the rules and avoiding fines—in the long term, it is also about economic sustainability and profitability. Industry associations have developed best management practices to help meet these objectives.

One of the major roles of industry groups is serving the aquaculture industry and other interested parties as a clearinghouse of information about aquaculture. For example, the NAA serves as a direct source of information for the industry, as well as reporters, government agencies, teachers, students, seafood buyers, consumers, and others. Questions on current issues, trends, statistics, and other specifics about the domestic aquaculture industry and its products are answered or referred to a credible source. The NAA is also involved in education and outreach as a partner, along with the U.S. Aquaculture Society (USAS) and the AFS FCS, to develop programming for Aquaculture America conferences that engage and inform both producers and researchers.

Another role of the NAA is to facilitate coordination and cooperation between regulatory agencies and the aquaculture industry to develop more efficient, effective regulatory outcomes. One such example is related to regulations that are intended to limit potential new invasive species because of their potentially devastating impacts on aquaculture as well as the environment. To this end, the USFWS, the Pet Industry Joint Advisory Council, the NAA, and others are currently working on a memorandum of understanding to voluntarily restrict certain nonnative species from commercial trade.

PROFESSIONAL ORGANIZATIONS

The AFS has an opportunity to partner with other professional associations on commercial and public aquaculture issues. For example, the mission of the USAS, a chapter of the World Aquaculture Society, is to provide a national forum for the exchange of information within the U.S. aquaculture community. This is achieved in part through sponsorship of aquaculture workshops and annual conferences, fostering educational opportunities, and disseminating aquaculture-related materials pertinent to U.S. aquaculture development. The USAS has between 800 and 1,000 members, representing all sectors of academia, government, industry, and other public and private organizations. Specifically, this mission is achieved through increasing U.S. aquaculture community involvement in USAS; enhancing member benefits and services; focusing on and increasing student involvement in aquaculture; developing partnerships, collaborations, and coalitions with and among other aquaculture-related organizations in the United States; as well as establishing and documenting efficient, effective, and high-quality business and management practices. As is readily

² Policies affecting aquaculture can be downloaded from the USFWS's website (USFWS 1995).

apparent, the mission of the USAS is integrally connected to programming conducted by the USDA, NOAA, NAA, FCS, U.S. Aquaculture Suppliers Association, and others. Other professional associations including the National Shellfisheries Association and the North American Association of Fisheries Economists have similar missions and activities.

GREATER AFS ENGAGEMENT IN COMMERCIAL AQUACULTURE

The FAO (2010) made the following observations on effective regulation of fisheries and aquaculture:

Where aquaculture governance has proved fruitful, it appears that governments have followed four main guiding principles, namely: accountability, effectiveness and efficiency, equity, and predictability. Accountability would be reflected in timely decisions and would imply stakeholder participation in decision-making processes. Effectiveness and efficiency consist of making the right decisions and implementing them effectively in a cost-effective way. Equity requires that all groups, particularly the most vulnerable ones, have opportunities to improve or maintain their well-being through the guaranteeing of procedural fairness, distributional justice and participation in decision-making. Predictability relates to fairness and consistency in the application of laws and regulations and in the implementation of policies.

Despite favorable demand and supply conditions, commercial aquaculture remains underdeveloped in some regions including the United States, in part because of regulatory complexities, occasional unfavorable public perception, conflicting uses of public waters and resources, and because the industry is relatively small and diverse. The AFS has a role and responsibility to join stakeholders—including those mentioned above—to address the grand challenges of future seafood demand, maintenance of healthy ecosystems, and improved food security. What is the role of AFS? Our role is to speak on behalf of the resource and our profession and to partner with the agencies and stakeholder groups outlined above in supporting the growth of aquaculture in a way that maintains healthy ecosystems. There are many stakeholders in aquaculture, and we can facilitate meaningful, collaborative interactions between them by connecting the dots and filling the gaps.

Education and Professional Development

The AFS is already working in partnership with federal agencies and industry and professional associations on commercial aquaculture issues. For example, the AFS has long partnered with USFWS, NOAA, and others in sponsoring sessions at professional meetings on a range of topics, including aquaculture and the environment. An important issue affecting commercial and public aquaculture is the trend of reduced public funding for research, extension, and education-related programs, due in part to current economic and budgetary is-

ues. This trend may have a significant negative effect on future advancements of aquaculture-related programs in the United States. This recent decline is further exacerbated by a progressive reorientation of postsecondary institutions with traditional aquaculture training programs to other subject areas more amenable to future funding opportunities. A collaborative project between the AFS, FCS, National Shellfisheries Association, USAS, and USDA NIFA is conducting national assessment of aquaculture education programs at postsecondary institutions in the United States. The primary goal is to document aquaculture-related instruction at postsecondary institutions in the United States to assess its current status, future trends, and critical needs for national readiness and capacity to support a world-class trained and educated workforce. The results from this collaborative project will allow multiple stakeholders in the aquaculture sector to not only leverage and maximize output from available resources and infrastructure but perhaps also to join together with a common voice to foster and advance aquaculture in the United States.

Policies

Another way in which the AFS participates in the aquaculture arena is the development of AFS policies related to aquaculture. Policy statements summarize the position of the AFS on particular issues related to aquatic resources, and because they represent our membership of some 9,000 fisheries professionals and undergo a rigorous review process prior to acceptance, they can be very effective tools in communicating with decision makers and the general public in the common language of the best available science. There are currently 34 AFS policy statements, including a policy on commercial aquaculture (in place for many years and currently undergoing routine review by the Resource Policy Committee), and the recently adopted policy on the need for an immediate-release sedative for use in fisheries and aquaculture. Both serve as benchmarks of reasonable, scientifically justifiable interpretations of issues that, at times, can be controversial.

Outreach and Education

There are considerable overlaps in the interests and goals of commercial aquaculture, public aquaculture, and fisheries communities, especially in research, extension, and technology transfer. The AFS can play a more direct role in education and outreach by providing tools and resources to those working in the aquaculture field. Examples include the *Guide to Using Drugs, Biologics, and Other Chemicals in Aquaculture and Companion Treatment Calculator* (prepared by the FCS Working Group on Aquaculture Drugs, Chemicals, and Biologics) (FCS 2012), “Approved Aquaculture Drugs and Biologics” posters (prepared and distributed by the USFWS in cooperation with the FCS, Fish Health Section, and American Veterinary Medical Association) (USFWS 2012a, 2012b), and the *Guidelines for the Use of Fishes in Research* (prepared by the AFS in cooperation with American Institute of Fishery Research Biologists and the American Society of Ichthyologists and Herpetologists) (AFS/AIFRB/ASIH 2004). These resources, along

with many others developed by the society, FCS, Fish Health Section, and other AFS units, provide aquaculturists and those working in allied fields with valuable guidance and tools for their work.

Creating a Forum

Perhaps the most important role of AFS is that of a facilitator. Not everyone interested in aquaculture is a government employee, works on a commercial farm, or is necessarily actively involved in aquaculture. Without a “home” or a national forum, how do these diverse individuals and interests interact with those who are part of a formally recognized stakeholder group? The answer is AFS. The AFS—representing all of the fisheries disciplines—is the common denominator for all those interested in aquaculture, fisheries, and related fields. At times, individual members and, indeed, the society as a whole have seemed reluctant, perhaps even recalcitrant, in accepting commercial aquaculture as a part of fisheries. But we cannot allow the complexities of independent actions and differing perspectives to dissuade or convince our society that this is anything but our most powerful role and greatest responsibility—to help create and shape the shoal of aquaculture stakeholders. The stakes for an increased sustainable seafood supply are high, and whether in the context of fisheries, aquaculture, or the continuum between, there is no single issue more central to our society.

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