Use of Hatchery Fish in Enhancement Programs

By Robert R. Stickney

ABSTRACT

The practice of stocking hatchery fish is coming under increasing criticism. Views that genetic integrity may be altered by the intermingling of wild and hatchery fish originating from different stocks and that hatchery fish have been genetically altered as a result of generations of selection are widely held. Past breeding and hatchery management practices have produced instances wherein hatchery fish were poorly prepared to compete in the wild.

Future approaches to using hatchery fish for enhancement of fisheries can be expected to vary from virtual total dependence on hatchery fish to the elimination of hatchery fish from the management plan. In many instances, hatchery fish will be used in conjunction with habitat preservation and enhancement, but those fish may be produced in a manner quite different from what has been true in the past.

Management programs in which fisheries scientists collaborate in their approach to enhance depleted fish stocks will be required. By obtaining input from various disciplines, protocols can be developed that will meet the objectives of policy makers while maintaining the resource's diversity and well-being.

Most aquaculture conducted in the world is aimed at the production of aquatic organisms for human consumption. In the United States aquaculture had its foundations in the establishment of hatcheries to produce fish for stocking as a means of increasing the numbers of fish available in recreational and commercial fisheries. Such increases in the supply of catchable fish are known as *enhancement.* Fisheries managers in the United States have relied heavily on hatchery production as a source of fish for stocking for more than a century. Only in the past 40 years has commercial aquaculture achieved much visibility in North America.

Questions about the use of fish stocking have arisen periodically for decades, but only in the past few years have widespread, serious reservations concerning such use been expressed. When criticism of enhancement hatchery programs first appeared, many involved in fish culture responded by ignoring critics. The secondary phase was denial of criticisms and attribution of them to ill-informed troublemakers. Denial has now turned to introspection in many instances, and hatchery workers are recognizing that legitimate criticisms have been raised and that it will be necessary to respond by reevaluating the future role of hatcheries in enhancement. The purpose of this paper is to provide a brief history of the development of enhancement hatcheries, outline some issues that need to be addressed, and offer a mechanism by which fisheries scientists can resolve those issues.

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Enhancement Hatcheries in the United States

Fish hatcheries are nothing new in the United States, nor is the introduction of hatchery fish into waterbodies outside of their native ranges. The development of hatcheries and distribution of fish to regions where those fish either did not naturally occur or where they were present in what were considered insufficient numbers began during the latter half of the 19th century. The hatchery system was based on the view by fisheries managers that greater yields would accrue to fisheries as a result of enhancement stocking. Fish culturists responded by producing enormous quantities of various species (Tables 1 and 2). Some early successes and failures associated with sport-fish introductions were reviewed by Radonski and Martin (1986).

At one time, railroad cars crisscrossed the nation delivering fish to freshwater and marine habitats. During 1881, for example (Anonymous 1884), more than 100 railroads cooperated with the government by providing space in baggage cars for fish and by stopping trains upon request so the fish could be stocked. By 1906, six specially designed, fish-hauling cars were in use on U.S. railroad tracks (Anonymous 1906). In that year those cars covered more than 93,000 miles to make their deliveries. Anecdotal reports indicate that if a carload of fish began to show signs of oxygen depletion or other problems, the whole load might be stocked into whatever waterbody was handy.

Because the technology involved in rearing the larvae of many species had not been developed during the early years of fish production, newly hatched fish (and shellfish) were typically released. Whether such releases led to subsequent returns to either commercial or sport fisheries is unknown. We can reasonably assume that the level of recruitment was minuscule at best for most of the marine species, due to their extremely small initial size, high vulnerability to predation, and frequent release into inappropriate environments.

Ultimately, as fish culturists developed the knowledge required to provide the environmental conditions and feeds that would support the growth of fish larvae, state and federal fish hatchery production became focused on species that could be reared to fingerling, smolt, or even catchable size. For the past several decades, hatchery production for enhancement has been limited to relatively few species and groups of species, most of which are freshwater or anadromous. The red drum *(Sciaenops ocellatus)* is one notable exception. Enhancement hatcheries for red drum have been developed in Texas, and there are indications that released hatchery fish are contributing significantly to recruitment in the Gulf of Mexico (William P. Rutledge, Texas Parks and Wildlife Department, personal communication). Interest is growing in development of enhancement programs for other marine species such as cod, sablefish, and halibut.

Hatcheries were first established by state and federal agencies to enhance recreational and commercial fisheries. The point of origin of fish was not a consideration when stocking sites were selected as the concept of genetically isolated stocks had yet to be developed. While not typically designed with anglers in mind, the creation of reservoirs and farm ponds throughout much of the 20th century provided large expanses of water suitable for recreation. Stocking those waters has required hundreds of millions of hatchery fish. Natural waterbodies, including streams and the Great Lakes, have also been heavily stocked to maintain fish densities in the face of heavy angling pressure. Sometimes stocking has been with fish species native to the receiving waterbody, though in many cases that has not been the case.

The Columbia River Basin Example

Nowhere have the issues associated with using hatcheries to supply fish for enhancement stocking been more visible and contentious than in the Columbia River basin in the Pacific Northwest. While other examples could be provided, a brief discussion of the current situation and how it developed will provide background on how some of the issues surrounding hatcheries arose and will demonstrate some complexities involved in resolving them.

Completion of the Swan Falls and Lower Salmon Falls dams on the Snake River in 1910 was the beginning of the blockages that have altered habitat and reduced or eliminated access to salmon spawning habitat in much of the Columbia River basin. The Columbia River was first dammed in 1933, when the Rock Island dam was completed (Anonymous 1976). While many of the dams had no provisions for fish passage, the theory that salmon return to their home streams for spawning was not developed until decades after the first dams were constructed (Hasler and Wisby 1950). Within a few years the theory was widely accepted (Hasler 1954).

Dam construction continued into the 1970s (Table 3). Fishways were provided around many of the dams, including the Bonneville Dam, which began operation in 1938, but losses of spawning habitat significantly reduced production potential within the river system. Historical changes in spawning areas were documented during the heyday of dam construction by Fulton (1968, 1970).

The loss of spawning habitat was recognized by the Mitchell Act of 1938, which authorized expenditure of federal funds to mitigate against salmon and steelhead losses in the Columbia basin. Fisheries managers considered hatcheries as the best means to provide that mitigation. Some

Table 1. Number of fish eggs and young fish stocked by the U.S. Commission on Fish and Wildlife in 1881 (Anonymous 1884).

Type of fish	Locations stocked	Number stocked
Whitefish eggs	4 states; Washington, DC; Germany; France	2,032,000
Whitefish young	3 states	17,750,000
Lake trout eggs	2 states, Germany	52,000
Brook trout eggs	1 state, France	50,000
Brook trout young	2 states	50,000
California salmon eggs	10 states, Canada, Australia	3,650,000
California trout eggs	11 states	179,900
Atlantic salmon (Penopscot)	8 states	1,006,300
Atlantic salmon (schoodie)	16 states, Germany	311,750
Shad	17 states; Washington, DC	67,003,000
Carp	47 states; Washington, DC	143,[illegible]96

Table 2. Partial list of fish species stocked by the U.S. Bureau of Fisheries in 1906. Numbers provided include eggs, fry, fingerlings, yearlings, and adults (Anonymous 1906).

Type of fish	Number stocked
Catfish	64,395
Shad	37,999,300
Whitefish	336,499,800
Chinook salmon	136,541,553
Silver salmon	6,707,894
Steelhead	2,329,935
Rainbow trout	2,195,570
Atlantic salmon	1,976,824
Lake trout	100,525
Brook trout	54,247,740
Pike	15,000
Smallmouth bass	195,596
Largemouth bass[a]	524,572
Pike perch	368,205,000
Yellow perch	161,946,065
Striped bass	2,351,000
Cod	159,492,000
Flatfish	285,049,000
Total[b]	1,931,834,609

[a]Largemouth bass were distributed to state facilities in Massachusetts, Pennsylvania, and Rhode Island as well as being directly stocked into receiving waters.
[b]Included were lobsters that accounted for 117,787,000 individuals.

Table 3. Dams on the Columbia and Snake rivers and the year each was put into service (Anonymous 1976).

Dam	Location	Year
Swan Falls	Snake River	1910
Lower Salmon Falls	Snake River	1910
Rock Island	Columbia River	1933
Bonneville	Columbia River	1938
Grand Coulee	Columbia River	1941
Bliss	Snake River	1949
C. J. Strike	Snake River	1952
McNary	Columbia River	1953
Chief Joseph	Columbia River	1955
The Dalles	Columbia River	1957
Brownlee	Snake River	1958
Priest Rapids	Columbia River	1959
Rocky Reach	Columbia River	1961
Oxbow	Snake River	1961
Ice Harbor	Snake River	1961
Wanapum	Columbia River	1963
Wells	Columbia River	1967
Hells Canyon	Snake River	1967
John Day	Columbia River	1968
Lower Monumental	Snake River	1969
Little Goose	Snake River	1970
Lower Granite	Snake River	1975

hatcheries were in operation long before the first dams were constructed; for example, the Little White Salmon National Fish Hatchery was built in 1896 (Nelson and Bodle 1990). Federal programs designed to augment salmon stocks in the Pacific Northwest were already underway before dam construction began on the Columbia. The federal government, along with local and state entities in Washington, Oregon, and Idaho, operate hatcheries on the river system. Washington, for instance, operates 58 hatcheries and has had a hatchery program for nearly 100 years (Peck 1992).

More dams were accompanied by decreased salmon returns to upstream spawning grounds, and mitigation hatcheries proliferated. Outmigrating smolt losses through dams are high because of passage through turbines and gas bubble disease (caused by supersaturation of the water with nitrogen below some of the dams). Trucking and barging of smolts around dams have been used in an attempt to increase survival. Because of poor outmigrant survival, loss of spawning habitat, and inability of returning fish to reach their natal spawning grounds, the majority of the early hatcheries on the Columbia River were constructed downstream of the dams. More recently hatcheries have been constructed on the middle Columbia and Snake rivers (Lower Snake River Compensation Plan) and administered by local utility districts and the U.S. Fish and Wildlife Service.

In general, as the numbers of hatchery salmon stocked have increased because of more hatcheries and increased production within given facilities, salmon runs in the Columbia River and elsewhere have continued to decline (Hilborn 1992a). The pattern described by Nelson and Bodle (1990) may be typical. Those authors found high early hatchery production levels that allowed the stocking of millions of native fish. That phase was followed by a decline in returns of native chinook salmon to the extent that an exotic stock was introduced. The practice of bringing in new stocks has been criticized by geneticists because genetic integrity may be lost when mixed stock populations are created. (Genetic integrity refers to characteristics in the genome of a group of fish, including gene frequency, that distinguish it from other populations of fish within the species.)

Problems and Potential Contributions from Hatcheries

Recently, hatchery programs, particularly in the Pacific Northwest but also elsewhere, have become the object of increasing criticism. Hatcheries have been described as a form of techno-arrogance (Meffe 1992) by attempting to use technology to remedy a problem created by habitat destruction and overfishing. Hilborn (1992b:5) expressed the view that hatcheries are part of the problem (and can be "ill advised and highly dangerous" to wild stocks). Fish culturists — who responded decades ago to the pleas of managers for more fish—have, according to some, become villains who carry the blame for declining fisheries resources (Martin et al. 1992). Introduced salmonids have also been charged with increased predation and competition, modification of habitat, and disease introduction (Krueger and May 1991). Even the strongest critics will acknowledge that a variety of other activities—including dam construction, habitat destruction, agriculture, forestry practices, overfishing, and urbanization—have had profound impacts.

With respect to the stocking of Pacific salmon, warnings concerning potential negative impacts of hatcheries on genetic diversity and maintenance of stock identity are not new (Krueger et al. 1981, Larkin 1981, Krueger and May 1991), although the debate has become much livelier and has garnered more advocates among fish geneticists in recent years (Waples et al. 1990a,b; Waples 1991b). As discussed by Waples et al. (1990b), there are three major concerns: (1) the levels of genetic variability in hatchery and wild populations may differ; (2) hatchery fish may become increasingly homozygous as compared to their wild counterparts; and (3) negative consequences


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Although numbers of hatchery salmon stocked have increased because of more hatcheries and increased fish production within facilities such as the Spring Creek National Fish Hatchery, salmon runs in the Columbia River and elsewhere have continued to decline.

may be associated with stocking hatchery fish on wild fish of a different stock, thereby altering the genetic makeup of locally adapted gene pools. While tools such as electrophoresis and DNA sequencing that can be used to discriminate among fish stocks have been around for years, fisheries scientists trained to use them have only extensively applied the techniques to hatchery versus wild stock issues since the late 1980s, when Endangered Species Act (ESA) issues surrounding salmon stocks surfaced. Waples et al. (1990b) used electrophoresis to examine the second of the three concerns mentioned above and found that hatchery and wild chinook salmon populations in the Pacific Northwest have very similar levels of heterozygosity. That result indicates the situation may not be as dire as some would have us believe.

While many believed the dams and resulting habitat loss spelled the end of numbers of upstream salmon stocks, fish from some upstream stocks continued to survive, if not prosper. Because of the way it is written, the ESA of 1972 can be interpreted to require revisiting the subject of upriver stocks in the Columbia basin and determining if any of those stocks should be listed. Under the ESA, any distinct population segment of any species of vertebrate fish or wildlife that interbreeds when mature is identified as a "species." Some questions remain as to what constitutes a distinct population segment. The issue has been explored in depth regarding Pacific salmon by Waples (1991a, 1991c).

Genetic assessment of upriver stocks confirmed the presence of many natural populations that had managed to survive in spite of the dams and associated spawning habitat losses. The National Marine Fisheries Services has listed four Pacific Northwest "species" as threatened or endangered (Redfish Lake sockeye, Snake River spring/summer chinook, Snake River fall chinook, and Sacramento River winter chinook). Nehlsen et al. (1991) indicated that at least 214 native stocks of salmonids exist in California, Oregon, Idaho, and Washington, and more than 200 of those stocks are at risk of extinction.

For stocks such as the Redfish Lake sockeye, the use of hatcheries to increase the numbers of surviving individuals to the point where they can be restocked with some possibility of becoming established again is the only option available. In 1991, three female and one male sockeye returned to Redfish Lake. Progeny from those fish were placed in hatcheries for growout (Conrad Mahnken, personal communication). A single male, milt from which was cryopreserved, returned to Redfish Lake in 1992. The situation in Redfish Lake has become more complicated (reviewed by the Snake River Salmon Recovery Team 1993) in that nonmigratory sockeye (distinct from kokanee) may contribute to what has been known as the Red Fish Lake sockeye population.

Genetic issues surrounding hatcheries are contentious and remain to be resolved. Some geneticists have taken the position that no fish should be stocked outside of its native watershed. For many U.S. watersheds, intermittent stocking with fish from various sources has gone on for decades. Populations of fish, such as some stocks of Pacific salmon, exist that have not been overplanted with hatchery fish from different stocks, but in much of the nation existing populations of fish were introduced or have been overplanted to the extent that any genetic uniqueness of the original stocks may have been lost. Confounding the issue are nonindigenous stocks that were originally introduced and have since become established. In the minds of some, such stocks are genetically distinct and should not be overplanted with fish from other stocks.

Some depleted fish populations perhaps can be brought back to desirable levels with the simple expedient of placing a ban on fishing. Such bans may be required for a short time (no more than a few years), or they may require decades. In some cases, stocks may become so depleted that fishing bans would be ineffective. Bans used in conjunction with enhancement stocking may be effective, although such programs have been implemented in only a few cases in the United States. Among them are those used in attempts to rehabilitate striped bass stocks along the East Coast and red drum stocks in the Gulf of Mexico.

The potential for augmenting other marine fish populations with fish produced in hatcheries is being investigated. Some progress toward producing fingerlings of various species has been made, but significant bottlenecks associated with low survival to and beyond first-feeding and the provision of nutritious, acceptable feeds remain. While virtually no stocking of marine fishes other than red drum and anadromous species is underway in the United States, alarms are already being sounded about the introduction of exotics and the potential disruption of genetic integrity. Interbreeding and inbreeding are ways in which genetic integrity can be altered.

Advocates of such enhancement programs are unlikely to recommend stocking of exotics (including nonindigenous stocks as well as non-native species) into habitats where previous introductions have not been made. In any case, the stock integrity issue is one that should be considered when enhancement protocols are developed. Even if enhancement hatcheries for marine fish depend on wild, not captive, broodstock; ensure that sufficient numbers of broodstock are used each year; and select broodstock randomly, genetic changes may be inevitable, as they are in natural populations.

New Approaches to Hatchery Management

Slight modifications in hatchery practices will not resolve issues related to salmon production. New approaches will be required to integrate hatchery production into ecosystem management programs. Quantities of fish produced will be far less important than quality and maintenance of genetic stock integrity.

Speculation on the future of enhancement stocking in the United States is made somewhat easier by the fact that fish culturists have recognized that, at least in some instances, stocking programs have not accomplished their goals; the performance of hatchery fish has declined over time; selective breeding has led to changes in allele frequencies in hatchery fish as compared with their wild counterparts; and overplanting wild fish with hatchery fish from a different stock can influence the genetic integrity of the wild stock.

These problems do not apply to all hatcheries or all species of fish being produced. The extremes that can be resorted to when using hatchery fish for enhancement stocking range from eliminating hatchery fish altogether and relying exclusively on natural production (perhaps in conjunction with habitat improvement), to ignoring any of the real or perceived consequences and relying exclusively on hatchery production to maintain fish stocks. In most cases, management plans will undoubtedly be developed that rely on a combination of enhancement or restoration stocking and habitat improvement to achieve programmatic goals.

The only way a stock such as the Redfish Lake sockeye has a chance of being saved is to use hatcheries. By maintaining endangered fish stocks in hatcheries for one or a few generations, producing sufficient numbers of fish to successfully reintroduce them to their native habitat may be possible. Such hatchery programs will not be effective, of course, if other constraints such as inappropriate temperature regimes, lack of access to spawning grounds due to river blockage, limited food supplies, overfishing, and so forth are not reduced or eliminated. It is necessary to evaluate each situation, consider methods that might be used to resolve problems, and develop management plans using the most appropriate of those methods. Solutions may or may not involve the use of hatcheries.

Sport fisheries dependent on hatchery introductions have been in place for decades and will continue to be maintained through enhancement stocking, particularly in artificial waterbodies. Inland stocking programs for bass, sunfish, walleye, and so forth will, in most instances, remain largely unchanged, although modifications to hatcheries aimed at reducing the amount of nutrient release will receive increasing attention. We should see increasing activity in the habitat restoration arena as fisheries managers attempt to restore impacted natural waterbodies to conditions that are more conducive to natural fish production. Augmentation with hatchery fish may still be required because of intense fishing pressure. To protect the genetic integrity of existing fish populations, policies that require stocking of hatchery fish with progeny obtained from the water system being augmented should be adopted.

Hatchery procedures, at least in the Pacific Northwest, are being reevaluated and in some cases altered. More dramatic alterations in hatchery practices will occur in the future as the emphasis changes from pushing more fish out the door to producing fewer fish that are indistinguishable behaviorally and genetically from wild counterparts.

Inland hatcheries for most species produce fish that exhibit good survival from egg to stocking size, and subsequent recruitment into the fisheries for those species is also relatively high. That has not necessarily been the case with Pacific salmon, where returns to hatcheries have ranged from virtually zero to 30% in the case of coho salmon (Hopley 1991). Hatchery managers are beginning to recognize that the quality and quantity of fish returning to their facilities are far more important than the number of fish being released.

New approaches being developed for salmonid hatcheries that may eventually be extended to other types of fishes include redesigning facilities so they more closely mimic the environment that the fish will face upon release. For example, reduced fish densities may lead to improved post-release survival. Providing hatchery fish with some natural foods may make more sense than the exclusive use of prepared diets. Research is underway to find ways to introduce prepared feed so it "behaves" more like natural food.

Hatchery fish should be trained to avoid shadows. For many hatchery fish, a shadow indicates feed is about to be offered. Once those fish leave the hatchery, they will continue to associate shadows with the provision of feed and not recognize that the eagle, great blue heron, or kingfisher casting the shadow is about to obtain an easy meal. Other modifications in hatchery practices can be made so the captive environment will more closely resemble nature.

Retrofitting existing hatcheries to the new approach may be simple in some cases, virtually impossible in others. Where complete replacement or extensive modification is necessary, costs will be high, but the rewards may more than offset the investment required. A good deal of research will be required before agencies throughout the nation rush to modify their existing hatchery procedures. Agencies should work together in determining what types of changes need to be made, setting overall production goals for watersheds they share, and assessing the results of their activities. At the same time, a considerable amount of attention and funding will be required to create and improve fish habitat to accommodate the fishes produced.

As more stocks of fish and other aquatic organisms are recognized as being threatened or endangered under the ESA, the need for conservation hatcheries will increase exponentially unless reauthorization of the ESA significantly alters the act. The lessons learned from reassessing production hatcheries (hatcheries that produce fish for enhancement stocking) can and should be applied to conservation hatcheries (those involved in activities related to the recovery of threatened and endangered species). At the same time, we stand to learn a good deal from conservation hatchery practices that can be applied to enhancement hatcheries.

Another issue that lurks in the background, but which has not been adequately addressed, involves the effect of stocking programs on indigenous species. The issue of stocking hatchery salmon on top of native salmon is one thing, but what are the consequences of increasing the numbers of one species of fish on other species inhabiting the same waterbody? Will continuous stocking of walleye in a Minnesota lake lead to displacement of a northern pike strain that might be genetically distinct? Will stocking hybrid sunfish in Texas reservoirs lead to the elimination of native stocks of green sunfish? Is the maintenance of genetic diversity in largemouth bass any more important than the maintenance of the same amount of diversity in a population of shiners being harmed by stocking those bass or the escapement of bait minnows?

Such questions are being asked, and research is needed to answer them so that sound policies can be developed.

The Need for Collaboration and Objectivity

Resolution of the issues surrounding enhancement stocking with hatchery fish, like so many issues that face our society today, will not be easy. Beyond considering the need to change hatchery practices to address the above issues is the need for all interested parties to work collaboratively. Fish culturists and the many fisheries managers who employ hatchery fish in their programs have been criticized by factions among the community of geneticists, environmentalists, and others who delve into the philosophy of science. This has resulted in an "us-versus-them" situation. Continued launching of charges and counter charges, often not substantiated by scientific evidence, will not resolve the issues. Instead, those involved should be working to identify researchable problems, develop mutually agreed-upon courses of study, objectively evaluate the data, and report the results in an unbiased way.

Most fisheries scientists are specialists who only have the background and skills to address a relatively small part of the complex problems facing us today. Interdisciplinary teams of scientists, working collaboratively, are more likely to determine what the actual ramifications of certain activities will be on a given fish population or community rather than individual scientists working alone. If all parties to the enhancement issue can agree on a set of goals, they should be able to develop and implement a plan to reach them.

Admittedly, few applications of this approach have worked in the past, but it must work if issues such as the use of hatcheries in enhancement are ever to be resolved. Participants in the process should include, but not be restricted to, fisheries managers, geneticists, fish culturists, bioengineers, water quality specialists, nutritionists, and ecologists. Scientists from those disciplines should come from universities as well as from agencies directly involved with the problem. The teams should maintain the highest level of scientific integrity and objectivity, and researchers should concentrate on high quality science and leave policy decisions to policy makers.

No one group of scientists can create a series of global recommendations on the enhancement issue. The best approach for maintaining salmon stock integrity in the Columbia River system while meeting the Northwest Power Planning Council's goal of considerably increasing the population of returning adults may have little or no bearing on the ramifications of enhancing wild halibut stocks with postlarvae or juveniles produced in hatcheries. Similarly, modifications to salmon hatcheries to enhance survivability of smolts and to maintain genetic integrity may not be required in hatcheries for certain other species of fishes. Approaches will have to be adjusted and teams developed to address regional and species- or stock-specific questions. Yet, networking of such groups and the distribution of research results through scientific literature will be extremely important for the avoidance of duplication of effort. Approaches developed by one team may sometimes be appropriate for adoption by others.

For collaborative science to work, participants must be willing to shed their individual biases. Each scientist must be willing to work cooperatively toward the development of research plans that will provide the most complete data sets possible within the limitations of technology and funding. Once collected, the data must be evaluated and reported objectively. Frequently, specific recommendations might result, although a series of alternatives may have to be offered, each with some probability of success or failure. Such information, backed by a cadre of experts, should provide policy makers with a stronger foundation upon which to base their actions.

The approach outlined may seem obvious and should, on the surface, be easy to implement. In reality, the approach is fraught with difficulty since it requires scientists to set aside their personal agendas and prejudices. Policy makers do not always follow the advice of the scientific community since often other social and economic pressures take precedent. In any event, fisheries biologists owe policy makers and the public the assurance they conduct their science properly and will make recommendations based on hard data, not gut feelings or personal philosophy. Therein lies the challenge and the opportunity to put the rancor and debate behind us.

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