

# **Rationales to Consider for a New Allocation Paradigm**

## **POPULATION GROWTH**

Overall population growth and a continuing shift to coastal communities will exacerbate inequities between commercial and recreational anglers in the decades to come.

According to a NOAA publication on population growth: “Total coastal population between the years 1980 and 2003 increased by 33 million people or 28 percent, roughly consistent with the nation’s rate of increase. Coastal population within the Pacific region showed the largest gain during this time with almost 12 million people, followed by the Northeast with 8 million people. The Southeast region, however, exhibited the largest rate of change with a 58 percent increase, followed by the Pacific at 46 percent, and the Gulf of Mexico at 45 percent. The rate of growth in the Northeast and Great Lakes regions was considerably smaller with 18 percent and 6 percent increases, respectively.

The Southeast has increasingly become a leading destination for retirees and job-seekers. Between the years 1995 and 2000, the Census Bureau reported that the highest levels of migration were to states that fall within the Southeast region and the Gulf of Mexico region, particularly to Florida, Georgia, and North Carolina.

More significantly, “Coastal counties constitute only 17 percent of the total land area of the United States (not including Alaska), but account for 53 percent of the total population.”

## **PARTICIPATION IN MARINE RECREATIONAL FISHING**

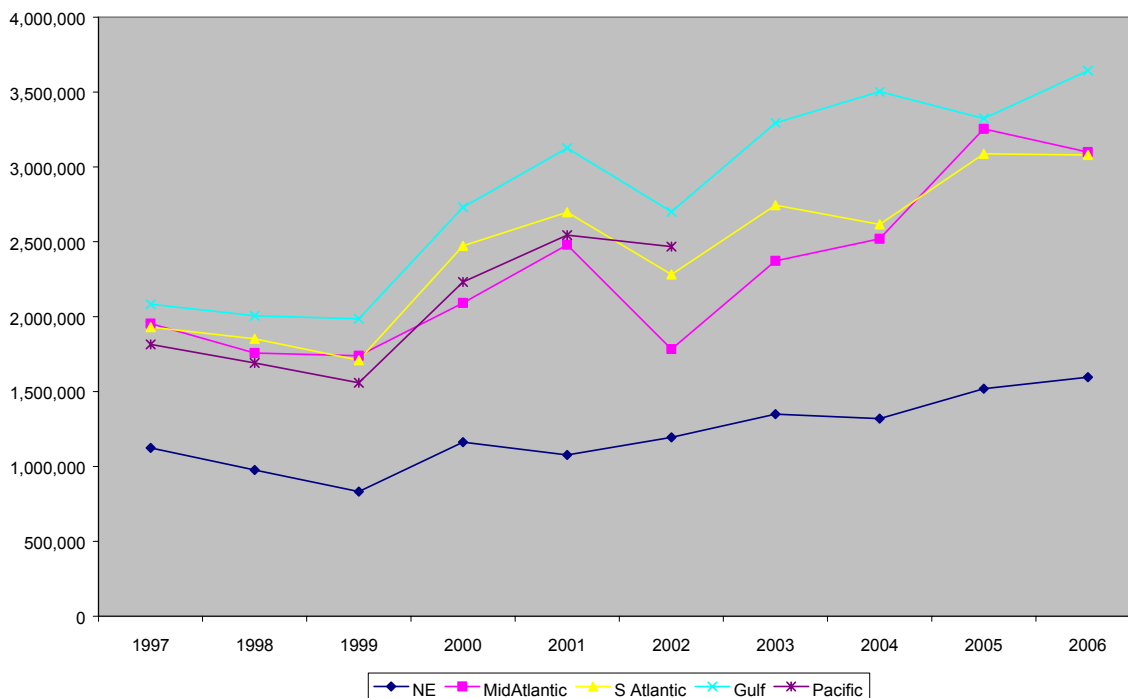
It is clear that more and more people will be moving to the coasts and that trend is unlikely to abate in the foreseeable future. Recreational fishing is a popular sport, and is frequently cited as an important reason many choose to relocate to coastal areas. We can expect participation and demand for access to recreational fishing activities to continue to rise:

“The total number of resident participants in marine recreational fishing in the Southeast region has averaged approximately 4 million residents during the 1990s. Florida has had the largest number of resident participants followed by North Carolina and Louisiana. Based on the survey results and Census Bureau population projections, it is expected that the number of participants in the region will increase at an average annual rate of 1.34 percent through 2025.

The total number of participants in the region would increase to approximately 5.5 million in 2025 with Florida, North Carolina and Louisiana continuing to have the largest number of resident participants. This increase in the number of participants is due to a general increase in the population throughout the Southeast. Despite this overall increase, the participation rate for marine recreational fishing is expected to decline as individuals in the prime participation cohort groups (white males ages 26 to 55) become a smaller proportion of the total population in each coastal state in the region.” (Current and Future Participation in the Marine Recreational Fishing in the Southeast U.S. Region J. Walter Milon, NOAA Technical Memorandum, NMFS-F/SPO-44 September 2000.

Additionally, data from the Marine Recreational Fishing Statistics Survey reveal increasing participation in marine recreational fishing:

**Marine Recreational Fishing Participation By Region**



Finally, the recently released U.S. Fish and Wildlife Service Survey (conducted every five years) showed a slight decline in the number of saltwater anglers in recent years, but a large increase in the effort (fishing trips) and expenditures generated by the reduced number of anglers. In the future, we can expect more people to participate in recreational fishing and expect some portion of the total allowable catch.

## **LEGAL UNDERPINNINGS TO ALLOCATION**

Allocation is inevitable in most fisheries in the United States. Marine biologists, resource economists and sociologists have all written volumes on the factors and the philosophy underlying the decision to allocate. Many would argue that allocations should involve consideration of past, present and future uses. Some would argue that allocation criteria include consideration of interests beyond the fishing industry, like consumers of fish and the interests of the public in knowing healthy resources are available to them even though they have no intention of using them.

CCA's view is more limited. It focuses on the specific criteria outlined in the Magnuson-Stevens Act and in the existing guidelines published by NMFS.

The issue of allocation is a complicated and, if done properly, a multi-faceted consideration. Generally it involves the distribution of fishing benefits among users with disparate degrees of dependence on the resource itself. In some cases, fishery management plans and managers come to the fishery with the allocation already in place as a result of geography, historic use or economics.

Most of the initial allocations under the Magnuson Act were made to preserve the status quo among the existing users. Some of these allocations were among commercial gear types (longlines vs. hook and line vs. purse seine in the bluefin tuna fishery). Some fisheries have been allocated through the use of sector quotas without any recognition that there has been an allocation (gag grouper and most of the North Pacific stocks).

Lastly, in many cases fisheries have been conducted without any regard to allocating fishing privileges among user groups (inshore and offshore shrimp fisheries). The spectrum of allocation ranges from fisheries where no allocations exist (shrimp) to ones where virtually every gear type and sector has its own quota (bluefin tuna).

There are three instances when allocation is necessary:

1. When it is specifically called for by the statute (16USC 1883(D)). The red snapper fishery is such an example, although this has never happened.
2. When a fishery needs to be rebuilt and either the benefits of the rebuilding or the restriction need to be redistributed to ensure that the various sectors are being treated fairly and equitably.
3. Where the implementation of the new provisions of the Act addressing accountability necessitates separation of sectors in a single fishery. This is in no way mandatory but may be necessary to treat different sectors fairly.

The principles and obligations for making allocations are spelled out in the Act, which requires the following:

1. National Standard number four requires all conservation and management measures to not discriminate between residents of different States;
2. Allocations shall be fair and equitable for all fishermen; reasonably calculated to promote conservation; carried out in such manner that no individual, corporation, or other entity acquires an excessive share of such privileges. ( 16 USC 1851(a)(4)) This is one of the original provisions of the Act and has been expanded on in the national standard guidelines (50 CFR 600.325) and by a number of law suits. Two parts of this provision are notable:
  - The first sentence applies to all residents and repeats a long standing constitutional requirement that the regulations can not discriminate between residents of different states. A provision that restricted the sale of fish to the residents of New Jersey might not be approvable if the same resource could be sold anywhere.
  - The second provision deals directly with allocations. If it becomes necessary to allocate fishing privileges, the allocations must be fair and equitable to all fishermen---not the public at large or the national interest. Fairness and equity is

determined by the record upon which the allocation is made. The record must support the logic of the decision being made and must have reflected a breadth of considerations when being made. An allocation to one sector without consideration of the historic catch pattern, social implications, impact on coastal communities, or the economics of other sectors is unlikely to be found as fair whereas an allocation that resulted after a reflection of all of this might be.

In 1996, the Act was amended to require the Secretary (in fisheries that are overfished) to adopt regulations that allocate both overfishing restrictions and recovery benefits fairly and equitably among the sectors of the fishery (16 USC 1854 (e)(4)(B)). This requirement only applies to fisheries with rebuilding plans, but generally reflects the same kind of analysis in National Standard 4. NMFS clearly views this as an affirmative obligation and included such a measure in the recently approved red snapper regulations.

We should stress that this is an affirmative obligation and that, in addition, it is an ongoing requirement. Every time the benefits and restrictions change there ought to be a reconsideration of whether they are fair or not. The simple “one time decision” in a plan like red snapper without any consideration of the improvement of the stock is not approvable. The distribution of the benefits among the directed and bycatch fisheries is the ongoing responsibility of the Council throughout the rebuilding plan.

How the decision of fairness will be made was addressed in the 2006 amendments to the Magnuson Act. Fishery Management plans must include a description of the commercial, recreational and charter fishing sectors, including its economic impact and, where possible, quantify trends in landings (16USC1853 (a)(13). [The purpose of this language was to give the Council economic information on the impacts of management measures when it developed them.]

A similar analysis is required of the Secretary when he approves a plan or amendment but it is not factored into the Council’s early decision process. In addition to this requirement, Congress added a specific requirement for plans that allocate amongst sectors:

"To the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate, taking into consideration the economic impact of the harvest restrictions or recovery benefits on the fishery participants in each sector, any harvest restrictions or recovery benefits fairly and equitably amongst the commercial, recreational and charter fishing sectors in the fishery" (16USC 1853 (a)(14).

The provision is quoted accurately, leading one to ask, “what does this section mean?” The last clause seems to put the same obligation on the Council as is presently on the Secretary, namely the fair distribution of restrictions and benefits. The first part can be read to say that whenever harvest levels are decreased the Council must allocate taking into consideration the participants in each sector.

The two-plan requirements and the obligation of the Secretary requiring redistribution of benefits and restrictions ought to be read together. Taken that way, then the obligation to allocate is mandatory in rebuilding fisheries and possibly in any fishery where harvest levels are reduced for any reason. If this interpretation is correct then any time a Council or the Secretary puts in new catch limits in a rebuilding fishery, they have to look at the economics of the fishery to determine if the distribution of the recovery benefits or restriction is fair. Then they can also look at other factors, like historic catch levels, although they are not required to.

There are no requirements in the Act to use historic catches, vessel size, race, color or creed in allocation criteria. Most of the elements used in plans so far have been established by the managers to make sure the allocation met the fair and equitable requirement of National Standard four:

1. Allocations are not required under the Act except in fisheries under rebuilding plans or where harvest levels are reduced;
2. Whenever they occur, the Act requires the Secretary and the Council to do an analysis of the economic impact of the proposed conservation and management measures on all of the participants in each of the sectors of the fishery;
3. The obligation is ongoing---the failure to address the distribution of benefits and restrictions by both the Secretary and the Council is a fatal procedural flaw;
4. The process allows the use of historic data but the use of the economic information is required;
5. The final product of the generic allocation plan ought to include a series of considerations (economic impact, historic catch, demographic shifts, impact on coastal communities, impact on fishing communities, etc.) and a process that allows them to be weighed.

## **ECONOMICS IN ALLOCATION**

Broadly defined, economists use two different metrics to examine the implications of policy decisions on society; economic value and economic impacts. The first, economic value, also known as economic benefit or welfare, monetizes the value society places on resources or activities. Economic value should be the metric used to decide between one course of action and another (Freeman 1993, Edwards 1990, and others).

Comparing value estimates between two proposed allocation schemes answers the question, is society better or worse off as a result of a particular allocation?

The second metric, economic impacts, examines the flow of expenditures on fishery resource activities and products as that spending moves through a community. While economic impact measures should not be used to choose a course of action, they can be used to examine what particular sectors in the economy are hurt or helped by a particular policy and by how much.

Economic impact analysis examines the distribution of value changes identified when comparing benefits, making both types of analysis complementary, and, as will be shown below, quite necessary when data on value cannot be obtained.

For both the recreational and commercial sectors, total value is the sum of consumer surplus and producer surplus. Producer surplus is measured by examining the supply curves for commercial producers of seafood, including harvesters, processors, wholesalers, and distributors, as well as the supply curves for recreational service providers such as charter and head boat operators. Essentially, producer surplus is the difference between the cost of producing the good and the dollar value generated by the sale of the good.

Consumer surplus is measured by examining the demand for goods at the consumer level, including the demand for fish at markets and restaurants and the demand for recreational fishing trips. Consumer surplus is the difference between the amount society would be willing to pay for the good in question, and what consumers actually paid for the good in the marketplace.

Value is not static across all allocations and, as any consumer obtains more of a good, the marginal value of obtaining the next unit of that good falls. That is, there are diminishing returns to additional consumption of any good and this is a fundamental tenet of consumer demand, which has important implications for allocation decisions.

A similar tenet exists for producers, but does not always hold true depending on the character of the industry. Table 1 includes a brief example for a hypothetical fishery. For example, the current allocation between commercial and recreational users is 50/50. An economist measures the commercial sector value to be \$50 million, the recreational value to be \$75 million, and total value of fishery to be \$125 million (sum of commercial and recreational value). This does not mean that the recreational sector should get 100 percent of the allocation. Because of the economic property of diminishing marginal returns described above, the total value of a 100 percent recreational allocation in this example is \$110 million, or less than the 50/50 allocation.

**While this example above suggests that allocation should be changed in favor of the recreational sector, how much should it be increased? Economists say that society’s benefit will be greatest when the allocation is set such that the marginal value, or the value of the next fish in the allocation, is equal across the two sectors. In the example shown in Table 1, total value is maximized when the allocation is set at 25 percent commercial and 75 percent recreational, or where the two marginal values are both \$4/fish caught.**

**Table 1. Value Table for a Hypothetical Fishery.**

Allocation		Commercial Sector		Recreational Sector		Total National Value (Millions \$)
Commercial	Recreational	Marginal Value	Total Value (Millions \$)	Marginal Value	Total Value (Millions \$)	
0%	100%	\$6	\$0	\$3	\$110	\$110
<b>25%</b>	<b>75%</b>	<b>\$4</b>	<b>\$30</b>	<b>\$4</b>	<b>\$105</b>	<b>\$135</b>
50%	50%	\$3	\$50	\$5	\$75	\$125
75%	25%	\$2	\$60	\$6	\$50	\$110
100%	0%	\$1	\$80	\$8	\$0	\$80

For the recreational sector, total value or net benefits, is the sum of the consumer surplus from recreational fishing participants and producer surplus from charter and head boat operators. For the commercial sector, total value is the sum of consumer surplus from the purchase of seafood products in markets and restaurants and the producer surplus from harvesters, processors, wholesalers, and distributors of those fishery products.

Estimating consumer surplus entails estimating demand curves for both the angling experience and for consumer purchases of seafood. On the recreational side of the equation, estimating consumer surplus involves specialized surveys of anglers. Work is needed to increase the number of fisheries covered by these types of surveys. On the seafood consumer side, data on the prices and quantities of seafood purchased in markets and restaurants is needed.

Unfortunately this type of data does not currently exist.

Estimating producer surplus requires data on the costs and earnings of all the various businesses involved in the production and sale of seafood or recreational services. Very little of this type of information exists, making the calculation of producer surplus difficult at best and impossible at worst. This is where economic impact models can provide some needed information, albeit imperfect.

Economic impact models use business transaction data collected annually by several agencies within the U.S. government to create a map of economic activity occurring in the economy between consumers and suppliers. These models produce three measures of economic performance: output, value added, and employment. In the absence of value, value added or contribution to gross domestic product (GDP) is an acceptable stand-in, but one that typically overstates true value across recreational and commercial sectors (Kirkley et al 2000).

Unfortunately, commercial fishing and charter and head boat businesses are typically poorly represented in the national data.

Very few studies of this type have been conducted for saltwater recreational fishing. One particularly good study was conducted by Kirkley, et al. (2000) regarding striped bass allocation in Virginia. The study used a specialized survey of recreational anglers and a cost and earnings survey of commercial fishermen. Using the commercial cost and earnings data and the recreational survey data, the study concludes that a 100 percent allocation to the recreational sector maximized net benefits to Virginia at a value of \$27.6 million. However, changing the split to 50/50 only reduced total value to \$24.6 million. The authors felt a sensitivity analysis was necessary to explore this result further.

One method to examine this sensitivity is to highly inflate the commercial value and ratchet down the recreational value, a type of least/most analysis. As a result, the team chose to use the value added of all sectors on the commercial side (most estimate) while using just the angler demand model and ignoring the for-hire sector on the recreational side (least estimate). Under this scenario, benefits to society would be maximized with a 75 percent allocation to the commercial sector. However, to support this level of benefit on the commercial side, the retail price of striped bass would have to exceed \$32/pound. After this and other types of sensitivity analysis the team concludes that the 100 percent allocation result is sound.

In 2000, NMFS estimated the value added of all recreational expenditures to be \$12 billion. NMFS is currently updating these estimates for 2006 and they look to be much larger. Annually, NMFS publishes the value added of all economic activity related to the seafood industry in Fisheries of the United States. For 2000, the seafood industry in the U.S. generated \$27.9 billion in value added (FUS 2000). That estimate includes the processing, wholesaling, distributing and retailing of imports and also includes industrial species and other species with no recreational component. Currently it is possible to calculate value added for any commercial or recreational fishery.

Recent calculations of value added in the summer flounder fishery indicate that the current allocation is not efficient or in the best interest of society at large. In 2006, the value added generated by anglers targeting or catching summer flounder was \$669.3 million using MRFSS directed effort and expenditure and impact estimates from NMFS (Gentner et al. 2001, Steinback et al. 2001, Steinback et al. 2004). Taking the commercial summer flounder landings from FUS and using the NMFS value added model, the value added of all commercial activity from harvester to consumer was \$79.7 million or more than eight times less than the recreational contribution to this country (FUS 2006).

Kirkley et al. also notes that it is important to examine social consequences. Large changes in allocations can lead to community impacts, labor displacement and loss of infrastructure that should be incorporated into an analysis. Additionally, their report did not examine substitutes in any meaningful way. That is, consumers might not change their fish protein purchase decisions, but instead switch to another species of fish. This would have the effect of lowering the value of the commercial side.

In summary, in order to complete the most rudimentary allocation analysis using commercial and recreational value added, recreational and commercial fisheries economic impact models are needed. On the recreational side, estimates of angler expenditures and impacts are available from either the USFWS estimates or NMFS estimates with both agencies having 2006 estimates available. On the commercial side, NMFS currently has the value added model used for FUS. NMFS is also in development of a national-level commercial model that includes everything through the retail sector thereby updating the FUS model created in the early 1980s. It is widely acknowledged, however that this type of technique overstates actual value in each sector. Additionally, it is a static methodology that does not capture angler or harvester behavior.

Ideally, then, specialized surveys of recreational anglers would be necessary in each fishery to develop marginal values. The surveys exist for red snapper, grouper, summer flounder, and salmon, rockfish, and halibut in Oregon, Washington, and Alaska. Additionally, cost and earning data would need to be collected for the commercial fisheries involved. Currently, few fisheries are covered by cost and earnings surveys.

Detailed consumer seafood purchase data would also be needed. Unfortunately, it is unlikely that species-specific information of this type will ever be collected forward of the harvester. Instead, economic impact models will be necessary to calculate the value added from the processing sector through to the consumer as a proxy for value. When specialized data on either side does not exist, it may be possible to use the least/most type of sensitivity analysis to examine allocations, but caution must be exercised when applying mixed methodologies.

As coastal populations increase, recreational angler values should increase as well. Recreational mortality will surely rise with rising participation, increasing the necessity to

address allocation for the health of the stocks. Additionally, reliance on domestically caught fish for protein will continue its downward slide, reducing the importance of the commercial industry in supplying U.S. protein needs. Other resources uses have gone the same direction, as can be demonstrated by current freshwater fishing, hunting, and public forest usage.

## **MANAGEMENT FOR THE CITIZENS OF THE UNITED STATES**

The U.S. is a steward of all of its natural resources---sunfish, ducks, deer, and striped bass--all of them. The concept that a private commercial enterprise is necessary to provide the public with the enjoyment of those resources by selling them to consumers so they can eat them was rejected by the federal government and state wildlife managers before 1900. There is no basis in any federal common law, any wildlife law or the constitution for such a proposition.