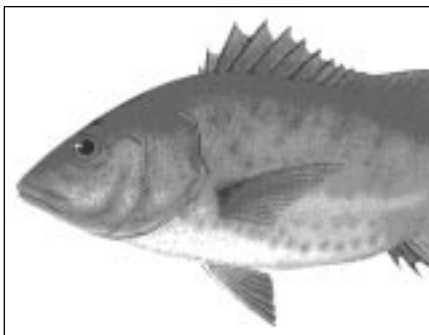


CASE STUDY 6

RED SNAPPER FISHERY MANAGEMENT IN THE GULF OF MEXICO



Situation

Declines in red snapper stocks in the Gulf of Mexico have impacted commercial and recreational fishers. Among the potential management plan options is the use of Individual Transferrable Quotas (ITQ). While ITQs have been employed within the commercial fishery sector, questions arise as to their applicability within the recreational sector.

Background

In 1984 the Gulf of Mexico Fishery Management Council implemented the Reef Fish Fishery Management Plan — its goal was to manage the reef fish fishery with the Gulf for attaining the greatest overall benefit to the nation. In 1988, a National Marine Fishery Service (NMFS) stock assessment indicated that red snapper was significantly overfished and that reductions in fishing mortality rates of as much as 60 to 70 percent were necessary to rebuild red snapper stocks to a recommended 20 percent spawning stock potential ratio. The 1988 assessment also identified shrimp trawl bycatch as a significant source of juvenile red snapper mortality.

In response, the Fishery Management Council amended the 1984 Fishery Management Plan. The 1990 Amendment 1 provided for a commercial quota of 3.1 million pounds of red snapper. In 1991, the Total Allowable Catch (TAC) was set at 4.0 million pounds with a commercial quota allocation of 2.04 million pounds and a recreational daily bag limit of seven fish (1.96 million pounds). The 1991 Regulatory Amendment also contained an intent by the Council to establish a 50 percent reduction of the offshore shrimp trawler fleet snapper bycatch in 1994.

Despite the intent of the 1991 Regulatory Amendments, the effort capacity for the commercial red-snapper fishery continues to be excessively high, given current quota levels, as evidenced by the 2.04 million pound quota (1992) being filled in just 53 days. Under Amendment 6 of the Reef Fish Fishery Management Plan, a quota increase to 3.06 million pounds provided some benefits but did not prevent a derby fishery from developing. Under the same quota, the 1994 season lasted for 77 days.

In reaction to the current conditions in the red snapper fishery the Gulf of Mexico Fishery Management Council is now considering a proposed Amendment to the existing Reef Fish Fishery Management Plan¹. Alternatives in this amendment include a proposal to establish a comprehensive effort management program for the red snapper fishery. The alternatives under consideration include:

1. No action (a system with additional effort controls beyond those currently allowed in the Fishery Management Plan's framework procedure for setting total allowable catch)
2. License limitation
3. Individual Transferable Quotas

Individual Transferable Quota Management System

The Council has identified an Individual Transferable Quotas scheme as the preferred alternative. An ITQ program would involve issuing either a certain poundage or percentage of the total annual commercial allocation of red snapper to each qualifying owner or operator, based on his or her historical landings in the fishery. This poundage or percentage would be that person's initial share. Shares would be the property of the shareholder, probably subject to annual administrative fees for issuing coupons and for transfers of shares. Shares or quota coupons would be transferable. Under an ITQ system, a "bycatch" allowance for red snapper would not be needed—anyone who wanted to sell *any* red snapper would be required to have quota coupons in the amount of red snapper landed for sale.

The expectations are that an ITQ program will result in increased revenues to the fishing industry as well as decreased total costs of harvesting. In addition, ITQs will afford fishermen greater flexibility by adjusting their share holdings and determining when they will go fishing. Fishermen who choose to exit the fishery may receive economic benefit if they sell their share of harvest privilege.

Under limited access alternatives, fishers would receive specific privileges to participate in the red snapper fishery based on an initial allocation scheme. Fishers who desire to subsequently enter or increase their participation in the fishery could do so only in conjunction with another fisher who decreases his or her participation or leaves the fishery. Thus, allocation of the commercial quota among users would be self-adjusting and ideally would be independent of measures to achieve or maintain the biological goals of the Fishery Management Plan. Unlike limited access, open access systems have no limits on the number of fishers in the fishery or the amount of fish

¹ GMFMC. 1994. Draft Amendment 8 and Environmental Assessment (Effort Management Amendment) to the Reef Fishery Management Plan of the Reef Fish Resources of the Gulf of Mexico

any fisher can harvest in a season. Allocation among commercial fishers and total annual harvest are treated as a single combined issue and are controlled by limits on short-term effort or vessel trip limits to spread out the harvest.

Costs of an ITQ System

Costs under ITQ management will be higher than under the other proposed alternative systems largely due to the need for increased enforcement and the extensive records and tracking system for coupons (or similar accounting devices) and ITQ shares. If law enforcement can be increased only to the level necessary to enforce current regulations or license limitation systems, then the additional cost is estimated at \$450,000 (Case Table 6.1). However, for “full” compliance, defined to be a compliance level of about 90 to 95 percent, the cost will be \$1,540,000. Therefore, depending on the level of compliance desired or necessary to realize a substantial portion of the benefits which are possible under an ITQ program, the enforcement costs will be covered by the range just described.

The public burden costs will be \$67,000 initially and \$64,000 annually thereafter. The National Marine Fisheries Service’s (NMFS) costs to design and maintain the ITQ system are estimated to be \$230,000 for the first year and then \$145,000 annually. The estimate of total costs for the ITQ program, which includes the Council and NMFS administrative costs will range from \$1.17 to \$2.26 (Case Table 6.2) million the first year and from \$659,000 to \$1.75 million annually, depending on the level of law enforcement. Case Tables 6.1 and 6.2 summarize the differences in cost between maintaining the status quo or imposing license limitations on the fishery.

Benefits

Changes in revenue to the commercial red snapper fishery are predicted based on historical prices and expectations of how different management systems will affect overall prices. In brief, the status quo is expected to result in an overall price decline of \$.15 to \$.40 per pound. The license limitation program is not expected to have much effect on current prices. The ITQ system can be expected to generate a price increase ranging from \$.85 to \$1.35 per pound based on the level of law enforcement. No information is available on the changes in benefits to recreational fishermen.

Exercise

The Gulf reef fishery is a multispecies fishery with two major user groups, namely, the recreational and commercial sectors. In 1991, the recreational sector caught about 52 million pounds of fish in the Gulf, of which no less than 13 million pounds may be considered reef fish species under the management unit of the fishery plan. For this same year, about 1.6 million individuals (coastal and non-coastal) participated in marine recreational fishing in the Gulf region, and about

Case Table 6.1. Costs associated with different management regimes for red snapper.

	Status Quo	License Limitation	ITQ
Council/NMFS administrative costs	\$339,884	\$339,884	\$339,884
Initial public burden cost to apply for permits	2,000	3,000	3,000
Annual public burden costs to maintain management system	28,000	32,000	64,000
Initial NMFS costs to design and implement management system	0	20,000	85,000
Annual NMFS costs to maintain management system	30,000	42,000	145,000
NMFS law enforcement costs to achieve acceptable compliance ¹	450,000	450,000	450,000 to 1,540,000
Coast guard enforcement	N.A. ²	N.A.	N.A.
Start-up plus first year	849,884	906,884	1,171,884 to 2,261,884
Continuing annual cost	508,000	524,000	659,000 to 1,749,000

¹ Current level of expenditure is estimated at \$400,000. Additional \$450,000 is required for any of the major alternatives.

² To be estimated.

SOURCE: Gulf of Mexico Fishery Management Council, Draft Amendment 8 and Environmental Assessment to the Reef Fish Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, 1994.

15.5 million fishing trips were made by the recreational fishers. There are no current estimates on the economic value of the recreational reef fishery in the Gulf.

In 1991, the commercial sector landed approximately 21.1 million pounds of reef fish with an ex-vessel value of \$34.6 million². In 1992, the commercial reef fish sector was composed of about 2,214 reef fish permitted vessels. Because of the moratorium on issuance of additional commercial permits implemented in May 1992, the number of permitted vessels could not significantly be more than the 1992 number. This moratorium is intended to remain in effect through 1995 unless earlier supplanted with a comprehensive limited access management system or extended by the Secretary of Commerce upon recommendation of the Gulf Council.

A major question facing the Gulf of Mexico Fishery Management Council is this: If an ITQ program for red snapper is developed, how will the initial quota be allocated between commercial and recreational fishers? All of the existing ITQ systems are designed to manage fisheries that are dominated by commercial fishing. There is no reason, however, why ITQs could not be used in recreational or combined commercial/recreational (or mixed) fisheries such as the red snapper fishery. As in commercial fisheries, problems of unlimited entry and inefficient allocation to low valued users can be overcome through the transfer of catch rights in the recreational fishery.

Theoretically, recreational fishers who have a high value for the resource could buy catch rights from other recreational fishers or from commercial fishers. Similarly commercial fishers could increase their individual share of total allowable catch by buying catch rights from recreational fishers. These sales of catch rights could be for part or all of a year or for the duration of the ITQ system. Although each group has a different motive for participating in the fishery, transfers of shares between different user groups would direct the share of rights to the most valued use. As a result, all harvest shares could be owned by either commercial or recreational fishers if they are willing to buy the harvest rights. If fishery managers decide that they want to preserve some portion of the total catch for a particular group of users then some of the catch shares can be exempt from trading.

The Council has three options. It can create ITQs for: (1) the commercial fishery only with recreational harvest regulated through bag limits and season closures; (2) a single class of ITQ shares for both commercial and recreational sectors with no restrictions on transfers between commercial and recreational fishers; or (3) two separate classes of ITQ shares — one for the commercial sector and one for the recreational sector. Separate subgroups within a recreational share class for certain groups of recreational fishers such as headboats, party boats, or other identified recreational groups could be established.

The rationale for these subgroups would be to protect certain recreational groups such as headboats or to protect stocks in specific areas. Alternatively, the initial allocation of ITQ shares could be used to address specific distributional concerns about recreational share ownership and allow full transferability to determine the most desirable pattern of share ownership.

Suppose that you are on the Gulf of Mexico Fishery Management Council. You are tasked with establishing a preferred option regarding initial allocation of ITQ shares within the current red snapper fishery. Consider the role of environmental valuation in your analysis of options. Us-

²Waters, J. 1992. Economic Assessment of the Commercial Reef Fishery in the U.S. Gulf of Mexico. NMFS Beaufort Laboratory, Southeast Fisheries Science Center, Beaufort, NC.

Case Table 6.2. Costs and benefits from alternative forms of management for red snapper.

Cost or Benefit	Status Quo	License Limitation	ITQ
Change in expected annual revenue based on quota of three million pounds	Decrease of \$450,000 to \$1,200,000	Not much change	Increase of \$2,550,000 to \$4,050,000
Change in cost of harvesting	Significantly higher	Not much change	Significantly lower
Effect on stock recovery affecting long-term revenues:	Low enforcement effort	Negative	None None
	High enforcement effort	Negative	None Positive
Public and private costs to implement	\$849,884	\$906,884	\$1,171,884 to \$2,261,884
Continuing public private annual costs	\$508,000	\$524,000	\$659,000 to \$1,749,000
Relative overall change in net benefits	Significantly negative	Not much change	Significantly higher but similar for each level of law enforcement.

SOURCE: Gulf of Mexico Fishery Management Council, Draft Amendment 8 and Environmental Assessment to the Reef Fish Resources of the Gulf of Mexico, 1994.

ing the following questions as a guide, outline the study you would request of the Council staff economist or outside contractor.

1. What information would be needed regarding the economic benefits of each allocation strategy in order to make a well-informed decision?
2. What natural resources services should be analyzed?
3. What techniques would you recommend in order to determine the values of these resources and services?
4. What are the limitations to the existing methodologies in this case?
5. What discount rate would you recommend in a benefit-cost analysis of each allocation alternative?
6. Based on your hypothetical stakeholder perspective, the information given, and your hypothetical “back-of-the-envelope” benefit-cost calculations, what option would you recommend as the preferred allocation option?