

## Thalassorama

### The Surf Clam ITQ Management: An Evaluation

The U.S. surf clam offshore fishery was the first fishery managed with limited entry and individual transferable quota (ITQ) systems under the Magnuson Fishery Conservation and Management Act. A vessel limited entry system was implemented for a period from 1977 to 1990 and an individual transferable quota system from 1990 to present.

In 1977, the surf clam offshore fishery was brought under federal management because of over-exploitation and nature disaster. The surf clam biomass had declined to a historic low after a period of high exploitation in early 1970's and new capital and vessels yet continued to enter into the fishery in spite of the low biomass. This over-exploitation condition was aggravated by an anoxic habitat condition off the New Jersey coast which was estimated to have destroyed 25% of the New Jersey offshore fishery in the summer of 1976 and to have ruined almost 70% of the fishery by the fall of that year.

The 1977 federal surf clam management system established a vessel limited entry program consisting of a vessel moratorium program, an annual fishery catch quota, a limitation of vessel fishing hours, catch logbooks and vessel permits. Other measures such as minimum clam size were added in later years. Under the vessel moratorium, only vessels that directed their fishing on surf clams between November 1976 and November 1977, were allowed to fish for surf clams with provisions to qualify surf clam vessels that were then under construction. The fishery quota was established and set within a range between 1.8 and 2.9 million bushels for the Mid-Atlantic area and between 0.025 and 0.100 million bushels for the New England area. Allowable fishing time was specified to maximize fishing seasons. However, the allowable fishing time was steadily shortened due to continuous increases in the fishing power.

When it was first instituted in 1977, the vessel moratorium program under the limited entry system was authorized only for one year with an intent that the program would be replaced with an alternative one such as a stock certificate program. However, the moratorium program was extended to 1990 while an alternative program was under development. During that time, the allowable fishing time had been reduced substantially to a historic low: A surf clam vessel was only permitted to fish six hours every other week by 1990. The low allowable fishing time led to low capacity utilization of fishing vessels and resulted in low economic efficiency of fishing firms. Under the moratorium, the administration of the fishing

This is an excerpt derived from a NMFS unpublished paper entitled "The Performance of U.S. Atlantic Surf Clam and Ocean Quahog Fisheries under Limited Entry and Individual Transferable Quota Systems" by Stanley D. Wang and Vuong H. Tang, Northeast Regional Office, January 1994.

time on the basis of individual vessels was also an administration burden for the federal government. Consequently, the federal government, the Mid-Atlantic Fishery Management Council and the surf clam fishing industry were unsatisfied with the vessel moratorium program. Finally, the vessel moratorium program and the entire limited entry system were replaced with an individual transferable quota system in October 1990.

Since October 1990, the fishery has been managed under an individual transferable quota (ITQ) system. Initial ITQ shares of the fishery quota were issued to vessel owners based on a formula of vessel historical catches (80%) and vessel sizes (20%). The ITQ shares can be subsequently traded or leased to any person or entity with neither preconditions of vessel ownership nor limits on the amount of ITQ shares owned by an entity. Vessel operators may fish any time with ITQ certificates. In addition, former effort control measures as well as minimum clam size regulations have been eliminated.

Substantial capital savings have accrued to the surf clam offshore fishery under the ITQ system. The surf clam offshore fleet shrank from 128 vessels to 59 vessels (Figure 1) within two years of the implementation of the ITQ system in 1990. This represents a 54% reduction in fleet and a historical low since 1980. Total gross tonnage of the surf clam fleet shrank by 52%. For example, a comparison between the 1986 peak level of capitalization under the limited entry system and the 1992 level under the ITQ system reveals that the capital savings under the ITQ system amounted to 85 vessels totaling 9,950 gross tons and about 320 crew members. This means that more capital and labor become available for employment in the other industries to benefit the U.S. economy. However, some economic and social dislocation has been created in the process.

The ITQ system allowed for the consolidation of crew and retirement of ves-

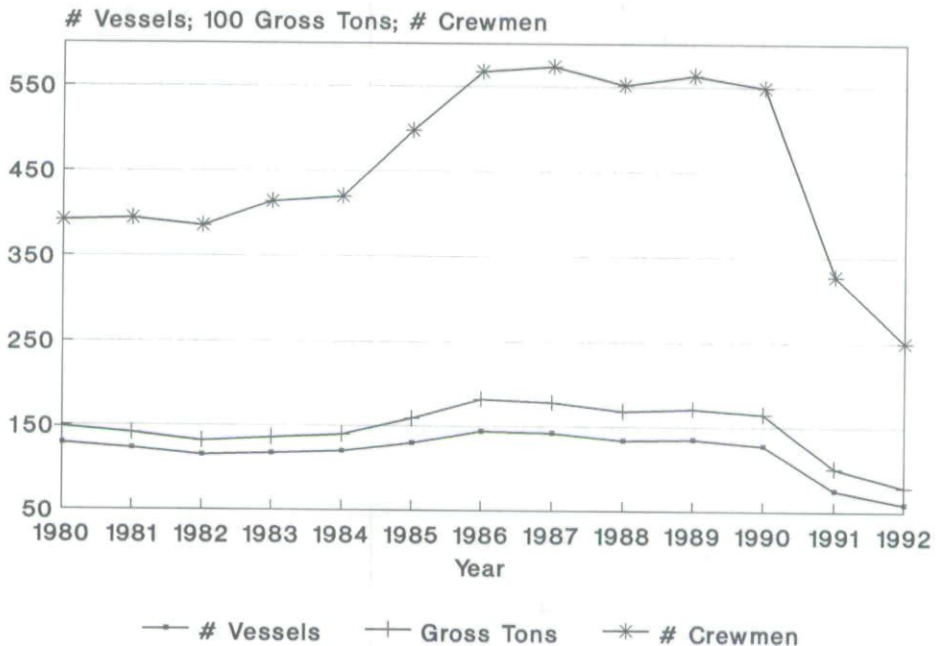


Figure 1. The Offshore Surf Clam Fleet (# Vessels, Gross Tons, # Crewmen)



sels and has also resulted in a substantial increase in the capacity utilization of fishing vessels remaining in the fleet. For example, the surf clam fishing hours per vessel increased by one and a half times from 154 hours in 1990 under the limited entry system to 380 hours in 1992 under the ITQ system. (Figure 2)

The ITQ system also improved vessel productivity to record levels as the fleet has reduced its excess capital and fishing capacity. The 1992 surf clam catch per vessel under the ITQ system was 47,656 bushels, an increase of 96% from the 1990 catch level under the limited entry system (Figure 3). Average catch per gross ton under the ITQ system exhibits an increase as well. As a result, the ITQ system should lower fishing costs and improve earnings of the surf clam fleet.

The ex-vessel price of surf clams declined as the landings of surf clams moved upward during the period from 1980 to 1992 (Figure 4). The 1992 ex-vessel price under the ITQ system was the lowest for the period. The surf clam price continued to decline during the period from 1987 to 1992 even with the drastic decline in the landings in 1987. This continual price decline is partially attributable to increasing substitution by consumers of ocean quahogs for surf clams and may be also associated with high buyer concentration in the ex-vessel market. However, of the total price decline during 1980-92, more than 90 percent occurred prior to introduction of ITQs. Thus, irrespective of what one believes about market power and concentration in the surf clam fishery, the data suggest that price declines were not caused by ITQs.

A few number of buyers have predominated the surf clam market. The market shares of large surf clam buyers declined steadily during the late period (1985-1990) under the limited entry system, but increased to a high level under the ITQ system (Figure 5). The 1992 market share of the three largest buyers was approx-

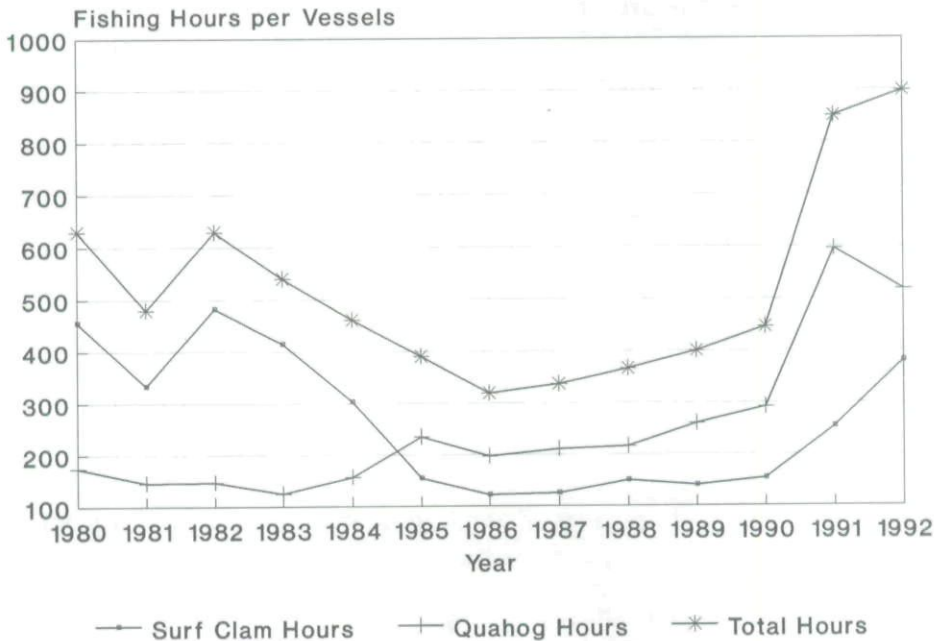


Figure 2. Fishing Hours Per Vessels: The Offshore Surf Clam Fleet

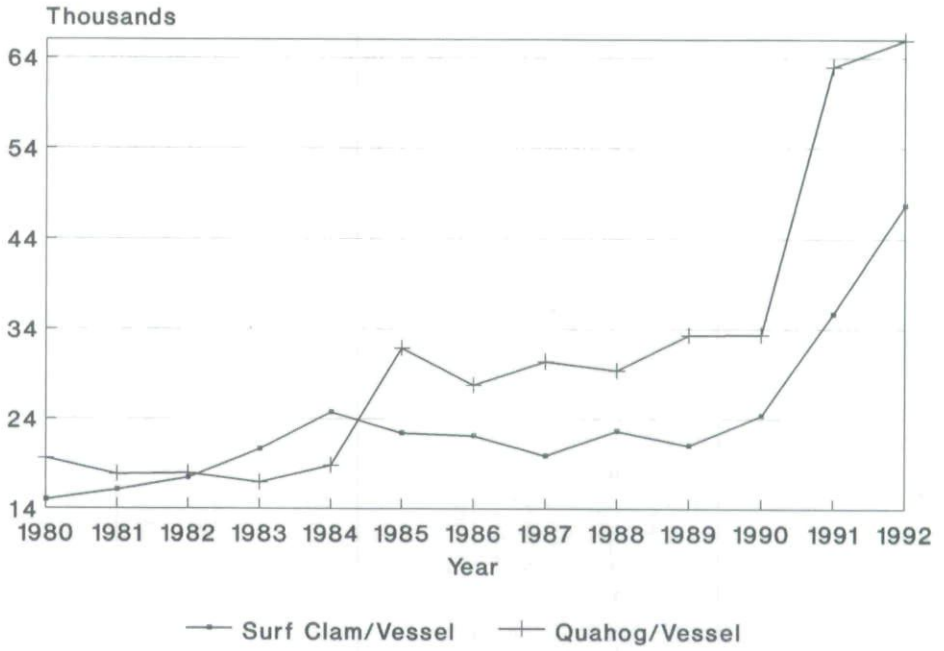


Figure 3. Landings per Vessels: The U.S. Offshore Surf Clam Fleet

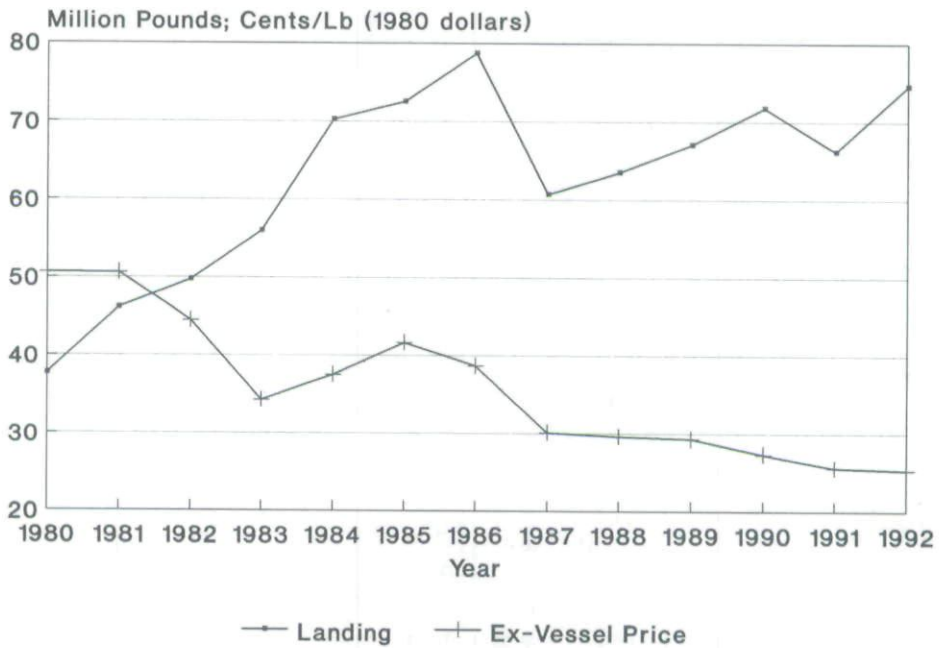


Figure 4. Surf Clam Landing and Price Surf Clam Ex-Vessel Market: 1980 Dollar

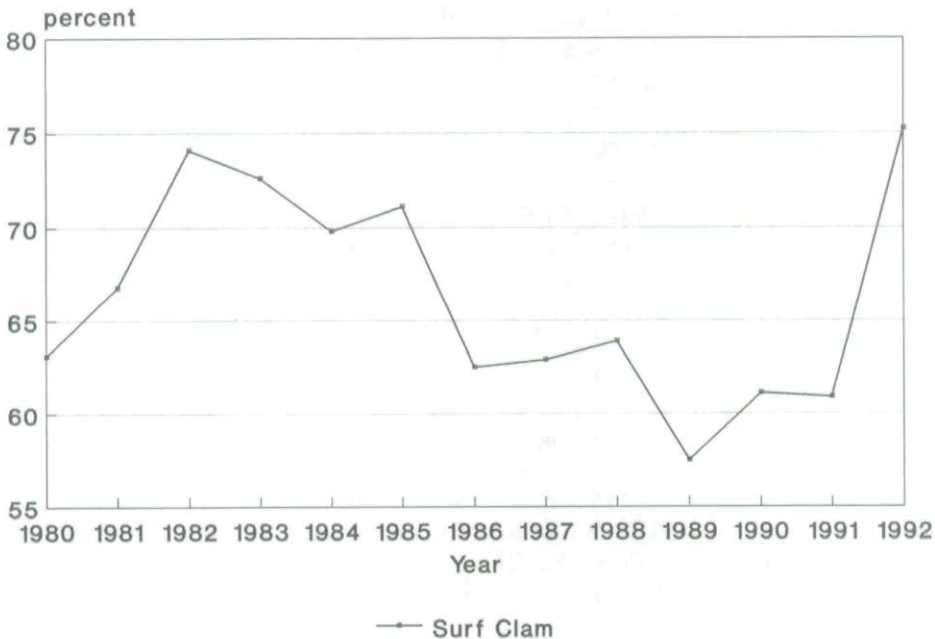


Figure 5. Surf Clam Buyer Concentration The Three Largest Buyers' Share

imately 75%, a historic high since 1986, indicating the surf clam ex-vessel market became more concentrated under the ITQ system.

Under the ITQ system, the ownership of ITQ shares has replaced the ownership of surf clam vessels as a way to secure the supply of surf clams as raw materials. Prior to the ITQ system, only surf clam vessels under the limited entry program were allowed to fish surf clams in the Mid-Atlantic area, the predominant surf clam area. As a result, integrated clam processors owned and operated surf clam vessels to secure the supply of surf clams.

However, any U.S. registered vessels are allowed to fish surf clams under the ITQ system as long as they fish with surf clam ITQ certificates. Therefore, the ownership of ITQ shares becomes the key element. In fact, some of the integrated processors have abandoned their vessel operations and focused on securing the ownership of the ITQ shares. It is not surprising, therefore, that the number of unique ITQ owners has declined since the implementation of the ITQ system in October 1990. The initial surf clam ITQ shares were allocated among 67 vessel owners.<sup>2</sup> By March 1992, the number of the ITQ owners had declined to 50 unique owners. From October 1990 to March 1992, there was a slight increase in the concentration of ITQ ownership. For example, three largest owners' ITQ shares rose from 51.3% to 58.1% during this period.

Based on a NMFS interview with some industry members in February 1992, the surf clam ITQs were traded for about \$20.00 a bushel and leased for about

<sup>2</sup> In October 1990, 161 vessels received the original ITQ shares, and of these vessels, 154 vessels had surf clam ITQs and 117 owned ocean quahog ITQs. However, the number of unique owners is smaller than the number of eligible vessels due to multi-vessel ownership.

\$4.00 per bushel annually. Accordingly, the offshore surf clam resource with a quota of 2.85 million bushels was evaluated at approximately \$57 million in 1992. The 1992 rental value of the surf clam ITQ shares as the resource rent was estimated to about \$11.4 million and captured by the industry.

In summary, the limited entry system consisting of a vessel permit moratorium and a fishery quota was not sufficient to deal with the issues of over-capitalization and its associated inefficiency in the offshore surf clam fisheries. Under the limited entry program, while the fishery quota was relatively stable, fishing capital increased continually because vessel sizes were increased, new and efficient fishing gears were adopted, and fishing labor was intensively employed. The ITQ management system made it possible for the fishing firms to use market mechanisms and forces in their business operation. The result is that the fishing industry has reduced the capital utilization and achieved economic efficiency. Within two years of the implementation of the ITQ system, the fishing fleet reduced its size by 54% and fishing firms, on average, rose vessel capacity utilization and productivity to a record level. Further, the surf clam resource rent created under the ITQ system amounted to \$11.4 million for the original vessel owners in 1992. Excess capital and labor under the ITQ system transferred to other fisheries and sectors of the economy through market mechanisms.

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