

Rent-Seeking and Property Rights Formation in the U.S. Atlantic Sea Scallop Fishery

STEVEN F. EDWARDS

National Marine Fisheries Service

Abstract *This paper chronicles rent-seeking in the U.S. Atlantic sea scallop fishery, including its influence on property rights formation. Decades of lobbying by the U.S. fishing industry against foreign fishing and seafood imports caused Congress to extend federal jurisdiction to 200 miles in 1977. Scallop fishermen initially earned high profits for their efforts, but by about 1990 the overcapitalized fishery was surviving on new year classes. Limited access and a stock rebuilding program were introduced in 1994, but an asymmetric distribution of potential gains in favor of relatively few, multi-permit companies has preoccupied public debate on the transferability and consolidation of fishing rights. Rent-seeking by the limited-access permit holders is now also focused on claims by the growing open-access sector of the scallop fishery, groundfish bycatch limitations, and gear-induced habitat damage, which has drawn lawsuits from environmental organizations.*

Key words Property rights, rent-seeking, sea scallop fishery.

Introduction

The slow appearance of individual transferable quotas (ITQs) in fisheries can be puzzling because of their ability to limit common pool losses. In the United States, where few fisheries have ITQs, most highly valued fishery resources were depleted at some point by excess harvesting capacity, which developed after extended jurisdiction was implemented in 1977. ITQs in the Mid-Atlantic surf clam fishery and the Alaska Pacific halibut fishery were not adopted until fishing times contracted to absurd levels. The U.S. Congress recently extended its 1996 moratorium on ITQs until 2003 to give interested parties time to design restrictions and guidelines for future use.

Resistance to ITQs can be due to the distributional implications of new property rights systems and to the high transaction costs of political negotiations when parties, including regulators, are numerous and heterogeneous (Johnson and Libecap 1982; Libecap 1989). Competing rent-seekers expend resources to build political support to either maintain or change status quo arrangements, including protecting or reversing recent changes. Libecap (1989) predicted that resources would be depleted before heterogeneous fisheries could negotiate ITQs.

The economics literature generally characterizes rent-seeking as an unproductive use of scarce resources designed to persuade government officials to create artificial scarcities in markets by assigning licenses, quotas, permits, or other entitlements (Buchanan, Tollison, and Tullock 1980; Rowley, Tollison, and Tullock 1988). Yet, rent-seeking could increase wealth in natural resource sectors if the reductions in common

Steven F. Edwards is an economist at the National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543, email: steve.edwards@noaa.gov.

Comments by Sam Pooley, Jim Kirkley, Phil Logan, Fred Serchuk, and Robert Repetto are gratefully acknowledged.

pool losses or externalities outweigh rent-seeking costs (Buchanan 1980). Property rights assignments underlie the rent-seeking process (Benson 1984; Buchanan 1980).

This paper chronicles rent-seeking in the U.S. Atlantic sea scallop fishery (scallop fishery), including its influence on property rights formation. Although recommended because the fishery primarily targets a single, sessile species (Sutinen *et al.* 1992), ITQs have been shunned by most scallopers and managers. The next section describes the history of the scallop fishery and its management. This is followed by sections which examine important aspects of rent-seeking in chronological order: rent-capture after successfully lobbying for extended jurisdiction; differences over transferable use rights due to asymmetric potential gains; and competition with the growing open-access scallop sector and with the groundfish fishery and environmental organizations, all mingled by spillover effects caused by scallop gear. The paper ends by commenting on related histories in other fisheries.

History and Management of the Scallop Fishery

The Atlantic sea scallop (*Placopecten magellanicus*) is a bivalve mollusc distributed throughout the Northeast Continental Shelf in the Northwest Atlantic Ocean between the Gulf of St. Lawrence, Canada, and Cape Hatteras, North Carolina, in the U.S. (Serchuk *et al.* 1979). Scallops are concentrated on Georges Bank off of New England and the Canadian Maritimes, the Mid-Atlantic (New York to North Carolina), and, to a significantly lesser degree, in the Gulf of Maine (figure 1). The marketable "meat" (*i.e.*, the adductor muscle attached to both shells) quadruples in size between ages three, when scallops recruit to the fishery, and five. Yield-per-recruit is maximized at about age seven. Losses in yield due to premature harvest are exacerbated by prices, which increase with meat size.

Commercial fishing for scallops dates back to 1887, when a quarter million pounds were harvested inshore in the Gulf of Maine by two-men crews on sailing craft outfitted with one three-foot wide oyster dredge (O'Brien 1961). During the next six decades, the fishery expanded in response to consumer demand and marketing, technological innovations in power and electronics, improved gear designs, and strengthened materials (Smolowitz and Serchuk 1988). By the 1990s, the technology of the large, tonnage class 3 (50–150 gross registered tons) and 4 (>150 tons) offshore scallop vessels peaked with 800+ horsepower engines, two dredges up to 15-foot wide each, state-of-the-art electronics for navigation and communication, and up to 14 crew who shucked catches on board. Reported landings peaked at nearly 38 million pounds during 1990 and 1991, but long-term potential yield is thought to be about 20 million pounds.

Tension between the U.S. and Canada developed after the mid-1950s, when Canadian scallopers moved onto Georges Bank and showed interest in the Mid-Atlantic. Between 1957 and 1977, U.S. landings from Georges Bank dropped from over 10 million pounds to well below 5 million pounds, while Canadian landings and exports to New England both increased from about 2 million pounds to over 25 million pounds, lowering U.S. dockside prices.

Federal involvement in marine fisheries included the 1945 Truman Proclamations on coastal and shelf resources and several international agreements and treaties intended to appease vocal and diverse groups of fishermen and processors (Hollick 1978). Continued demands for federal resource and trade protections culminated in 1977 with the Magnuson-Stevens Fishery Conservation and Management Act (M-S Act) and extended federal fisheries jurisdiction out to 200 miles from shore (Magnuson 1977). The International Court in the Hague divided U.S. and Canadian claims to Georges Bank in 1984.

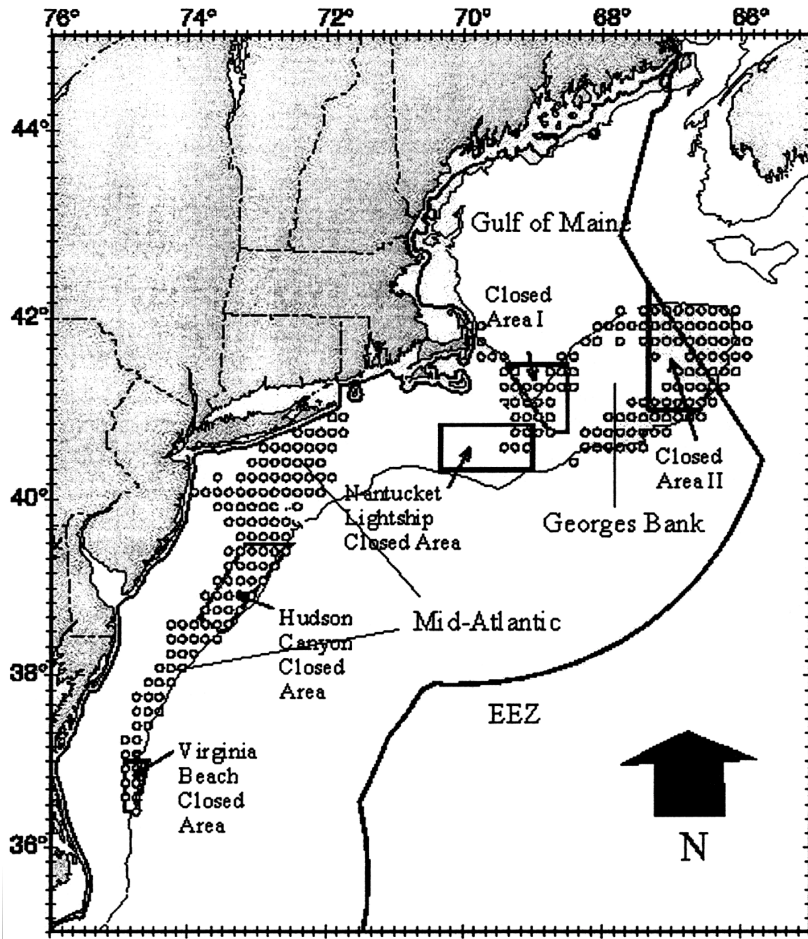


Figure 1. Closed Groundfish and Sea Scallop Management Areas in the U.S. Northeast Region

Note: Circles show scallop distribution on Georges Bank and the Mid-Atlantic. EEZ is the 200-mile extended economic zone. Latitude is north, and longitude is west.

The scallop fishery grew unregulated until 1982, when the New England Fishery Management Council (NEFMC) implemented a minimum meat size standard with the Sea Scallop Fishery Management Plan (Plan).¹ The number of full-time scallop vessels increased eight-fold between 1977 and 1993 (figure 2), including construction of 152 new vessels during 1977–82 alone. Aggregate fishing effort increased 500%. The fishery depended on premature harvest of small recruits to survive financially. The meat size standard was doomed by seasonal variations in meat size, on-board soaking, and inadequate dockside inspections.

¹ Contact the author for citations to the numerous regulatory actions (plans, amendments, frameworks, emergency, interim) and NMFS documents referred to in this paper. These are not referenced in order to save space.

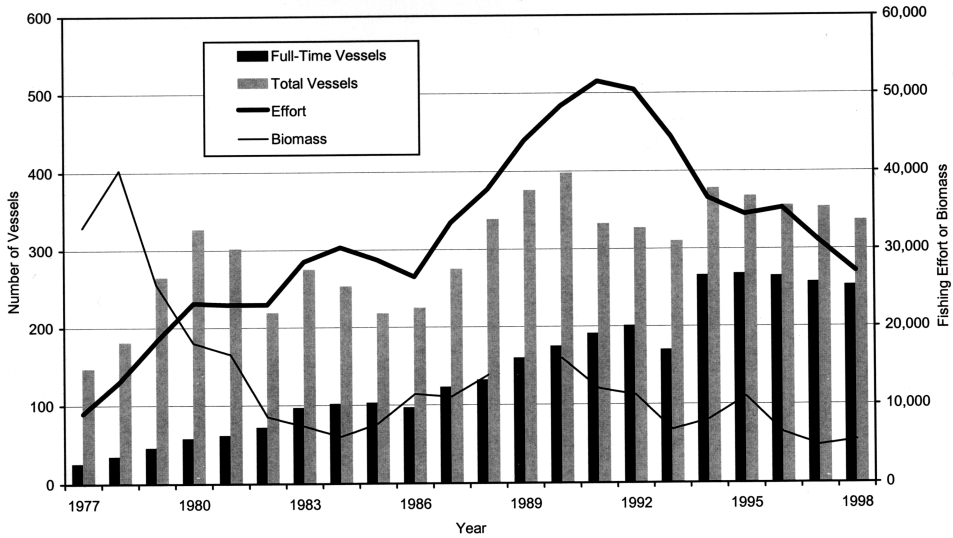


Figure 2. Vessel Numbers, Effort (days-at-sea), and Swept-Area Biomass (mt) in the U.S. Atlantic Sea Scallop Fishery

Amendment 4 to the Plan created a limited-access permit system in 1994 in the Georges Bank and Mid-Atlantic fisheries. The 357 limited-access vessels were restricted by a 7-man crew limit and allocated nontransferable days-at-sea effort quotas depending on their full-time (264 vessels), part-time (62), or occasional (31) permit category. Effort quotas were scheduled for nearly a 50% reduction over 6 years, including up to 120 days in the predominant full-time category. The amendment also retained open-access permits for small boats that targeted scallops inshore seasonally, but restricted them with a 400-pound trip limit. Roughly 200 open-access boats have landed less than a million pounds a year since 1994.

In December 1994, an Emergency Action taken by the Secretary of Commerce and adopted by the New England Fishery Management Council (NEFMC) closed nearly 5,000 square-nautical miles of the shelf off New England to all gear capable of catching groundfish. This was done in order to rebuild depleted stocks of Atlantic cod, haddock, and yellowtail flounder. Closed Areas I and II on Georges Bank and the Nantucket Lightship Closed Area off southern New England (figure 1) previously yielded half of U.S. scallop landings from this region.

At its December 1997 meeting, the NEFMC rejected making effort quotas transferable, including allowing multi-vessel companies to consolidate their limited-access permits. The NEFMC also adopted the Commerce Secretary's April 1998 Interim Action closures of the Hudson Canyon and Virginia Beach areas in the Mid-Atlantic (figure 1) to prevent premature harvest of small scallops. Together, the three groundfish and two scallop closed areas encompassed one-third of the scallop resource area on the shelf and, during 1998, 85% of the harvestable biomass.

This history covers a few phases of rent-seeking which are described below. The first phase involves cashing in on successful lobbying for extended jurisdiction and ultimately depleting the resource base. The second phase covers development of limited access and disagreement about whether to make use rights transferable. Finally, the limited-access permit holders are now lobbying for permanent access to the groundfish closed areas and protecting rents from the open-access sector and environmental organizations.

Short-Term Gains Following Extended Jurisdiction

After the federal government assumed full ownership of fishery resource rights with the M-S Act, it alienated management rights to regional councils of mostly government and industry (commercial, recreational, environmental) stakeholders. It also continued the *de facto* rights of fishermen to earn income from harvests and encouraged entry with vessel construction subsidies and favorable tax treatment. Although clearly serving the U.S. fishing industry, this open policy also could have been a cost-effective way for the federal government to enforce its claim against foreign fishermen (Lueck 1998). Subsequent management plans mostly micromanage the fishing industry with input and output regulations. However, regulations do not entirely limit harvests, because monitoring and enforcement are costly (Libecap 1989). Furthermore, regulations can redistribute benefits to politically powerful sectors in heterogeneous fisheries (Karpoff 1987).

The short-term returns to rent-seeking afforded by extended jurisdiction were estimated using an empirical version of Cheung's (1970) model of rent dissipation. Profit, π , in the scallop fishery was modeled as the owners' 40% shares of gross dockside revenue minus operating and fixed costs:

$$\begin{aligned} \pi = & 0.4[P(Q_{GB-MA}(D,B) + Q_{GOM} + M_{CAN}) \cdot Q_{GB-MA}(D,B)] \\ & - [0.8 \cdot p_{TC3} + p_{TC4}] \cdot [480D - 198,000 \cdot [D/d_{FT}]] \end{aligned}$$

where $P(\bullet)$ is a market price function specified with total scallop supplies (domestic landings, Q , from Georges Bank, the Mid-Atlantic, and the Gulf of Maine plus imports, M , from Canada);² $Q_{GB-MA}(\bullet)$ is an industry production function for the off-shore Georges Bank and the Mid-Atlantic fishery; D is fishing effort (days at sea); B is resource biomass;³ \$480 is the average daily operating costs of tonnage class 4 vessels; and \$198 thousand is the average fixed cost per tonnage class 4 vessel. The p_i are percentages of total fishing effort by tonnage class, and 0.8 is the relative size of tonnage class 3 costs. d_{FT} is average, annual effort by full-time vessels (assumed as in Amendment 4 to be 150 days or more), making D/d_{FT} the number of full-time-equivalent vessels. All costs and prices are in real 1996 US\$.

This simple profit model reflects data limitations as well as interest only in the magnitude and trend in industry profit. The only available cost data were from a report by Gautam and Kitts (1996), who compiled information from the federal income tax returns of vessel owners who received NMFS Capital Construction Fund loans during 1984–93. These data are from a non-random sample of 27 vessels in the fishery. Fixed costs do not include mortgage expenses, because the majority of vessels in the scallop fishery are paid for. The opportunity costs of vessel capital and owner-operators' time are unknown.

Dockside price was estimated as a linear function of annual scallop supplies during 1977–98 ($n = 22$) using the SAS GLS estimator:

$$\begin{aligned} P = & 10.07 - 0.000000092 \cdot (Q_{GB-MA} + Q_{GOM} + M_{CAN}) - 1.656 \cdot A4 \\ & (10.89) \quad (-4.36) \quad \quad \quad (-3.22) \end{aligned}$$

² NMFS in the Northeast Region collects landings data from vessels and first buyers. Import statistics are from the Division of Economics and Statistics Division of NMFS in Silver Spring, Maryland.

³ Swept-area biomass was calculated from the biomass density indices for Georges Bank and the Mid-Atlantic reported by the NEFSC in a stock assessment report. Weights per standardized tow of the dredge were divided by the area of a standard tow (0.001526 square miles) and then multiplied by the areas of Georges Bank and the Mid-Atlantic (7,456 and 8,427 square-miles, respectively). The results for Georges Bank and the Mid-Atlantic were added.

where t-statistics are in parentheses ($R^2 = 0.58$). Being the same species, scallops from the Gulf and Maine and Canada are most likely perfect substitutes in processing and consumption for U.S. offshore landings. The A4 dummy variable could reflect the influence of small scallops on average price, because Amendment 4 eliminated the minimum meat size standard in 1995. Parameters are significant at the 0.99 level. Autocorrelation (DW = 1.73 from GLS model; critical value of upper limit is 1.66 at 0.95 level) and heteroskedasticity (Glejster test: $F = 0.36 < F_{(0.05),3,18} = 3.16$) were not detected. Scallop (not sea scallop) imports from other countries and disposable per-capita income were not significant at even the 0.90 level. Simultaneity between demand and supply (e.g., captains extend trips hoping to get better prices) is a complex question that cannot be captured with aggregate annual data from a fishery that was open-access until late 1994.

A Cobb-Douglas production function for landings was estimated using 1977–98 data:

$$\ln(Q_{GB-MA}) = 8.361 + 0.707 \cdot \ln(D) + 0.489 \cdot \ln(B) - 0.200 \cdot A4$$

(5.96) (5.86) (4.94) (-1.82)

($R^2 = 0.81$). Here, A4 could represent the crew size constraint and exclusion from closed areas. Effort and biomass are significant at the 0.99 level; A4 is significant at the 0.90 level. Autocorrelation (DW = 1.91; critical value of upper limit is 1.66 at the 0.95 level) and heteroskedasticity ($F = 1.01 < F_{(0.05),3,18} = 3.16$) were not found.

The average profit (AP) and marginal profit (MP) of industry fishing effort were derived from the profit model and evaluated at values of D each year given p_i , d_{FT} , B , M_{CAN} , and Q_{GOM} . The average and marginal costs of fishing effort (including fixed costs) are equal because costs are linear functions of effort; however, they varied between years depending on the number of vessels and p_i . Values ranged between \$1,258 and \$1,421 per day during 1977–93, but the decline in d_{FT} after effort quotas were introduced in 1994 increased daily costs to nearly \$1,900.

Distributions around key inputs in the profit model were used to incorporate variability. Values for costs were drawn from triangular distributions between one standard deviation around the means. Predictions of price and production were augmented by normal distributions around the estimated residuals. The estimates of AP and MP, reported in figures 3 and 4, respectively, are means and standard deviations from 100 Monte Carlo simulations using @RISK for Excel spreadsheets. Results for 1989 are missing due to unavailable biomass data for Georges Bank.

Profit declined throughout the study period, especially initially. AP (figure 3) and MP (figure 4) were greatest in 1977, but by 1982 when the new Plan was implemented to “*maximize over time the joint social and economic benefits from the harvesting and use of the sea scallop resource*” (their emphasis; NEFMC 1982, p. 74), MP was consistently negative. These results are supported by a recent analysis of technical harvest capacity in the fishery conducted by Kirkley *et al.* (2001), who reported that 79 vessels could harvest the annual, long-term potential yield of 20 million pounds. By 1982, there were 71 full-time vessels in the fishery, plus another 147 vessels that fished at lower levels of effort (figure 2). Over 100 of the current limited-access vessels were constructed during 1977–79; another 50 were built during 1980–82.

Biomass improved by 1990 due to above-average recruitment of new year classes (figure 2). However, the fleet expanded and fishing effort doubled again. The estimate of AP turned negative in 1993 due to high fixed costs and low biomass (figure 3). Owner-operators also receive a portion of the crew share, however.

The regulated reductions in effort during 1994–98 did not improve industry profit, as most resource biomass was inside the closed groundfish and scallop areas

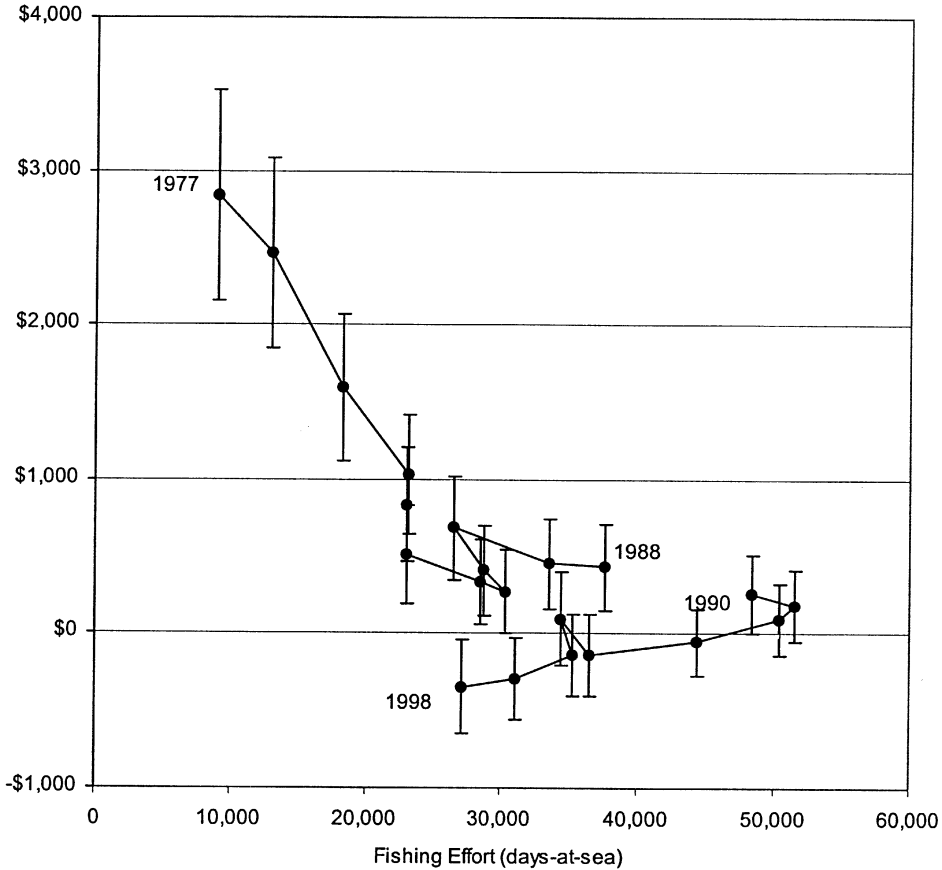


Figure 3. Average Profit per Day in the U.S. Atlantic Sea Scallop Fishery, 1977–98.

Note: Values are mean and standard deviation (1996 US\$/day)

(figures 3 and 4). Many scallopers remained active, despite poor returns, in order to maintain their fishing history.

Rent-Seeking for Transferable Property Rights

Work on Amendment 4 to the Plan began in 1990 with public hearings on alternatives to replace the meat count policy, which failed to rebuild scallop biomass. The fishery evidently expanded to its open-access limit by then, with estimates of profit per day averaging near zero (figure 3). New year classes were depleted within two years of recruitment, thereby foregoing considerable future rents. Fishermen agreed with NMFS that fishing effort should be curtailed in order to reduce fishing mortality to federally mandated levels; therefore, industry could accept limited access to prevent future, new entrants from dissipating gains from stock rebuilding. The industry advisors committee voted against ITQs, however, because of the experience

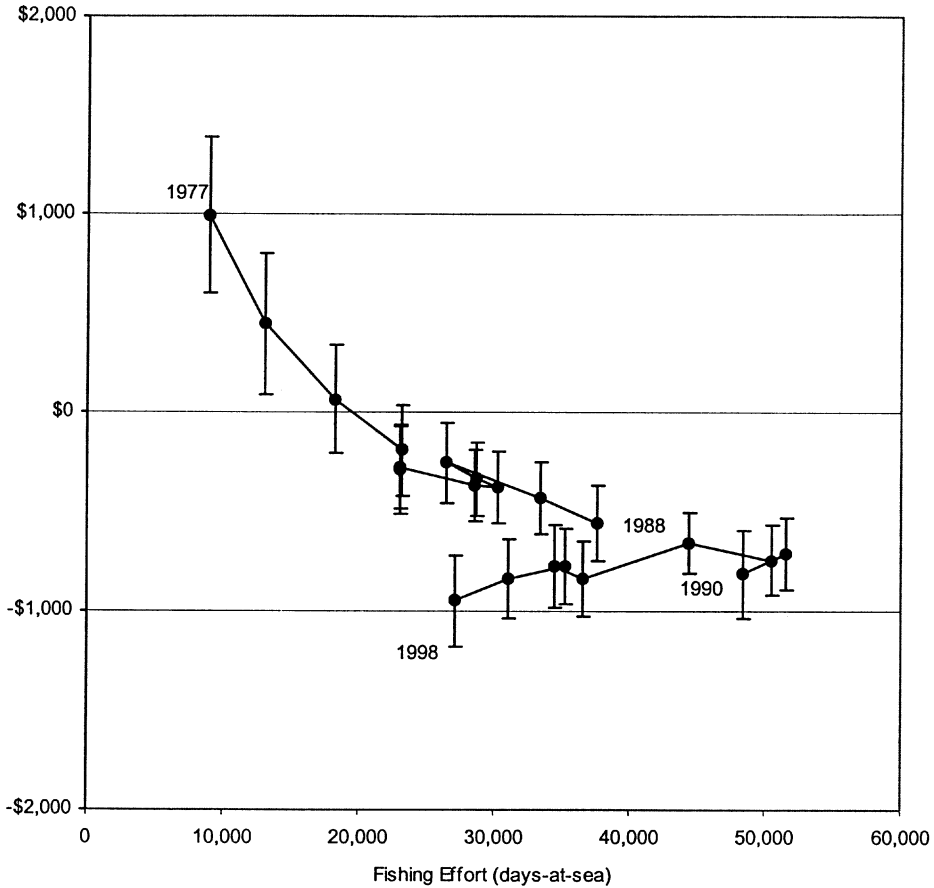


Figure 4. Marginal Profit per Day in the U.S. Atlantic Sea Scallop Fishery, 1977–98.

Note: Values are mean and standard deviation (1996 US\$/day)

of the surf clam fishery in the region, where it took 13 years to negotiate shares after limited access was implemented in 1977 (Wang 1995). Instead, they agreed to non-transferable vessel effort quotas. Unlike ITQs, effort quotas are not absolute constraints on production, and they preserve large differences in catch rates among vessels.⁴

The two sides to the transferability dispute formed organizations to promote their objectives to the NEFMC and local members of the U.S. Congress, while Amendment 7 was being designed during 1996–98 to implement the more strict criterion of biological overfishing imposed by the 1996 Sustainable Fisheries Act (SFA) amendment to the M-S Act. The new overfishing definition for scallops implied substantial reductions in vessel effort quotas, insufficient to cover fixed costs for most vessels; *e.g.*, 51 days for full-time permits in 2001 and as few as 34 days in 2004 of the 10-year rebuilding plan.

⁴ Personal observations appearing throughout this paper were gained while attending numerous meetings of management and technical committees.

Despite these plans to reduce effort, the 28-member Fishermen's Ad Hoc Committee from the historically dominant scallop port of New Bedford, Massachusetts, organized to block transferability. This organization lobbied for both a government-financed vessel buyback program to reduce capital in the fishery, and a redistribution to active vessels of days not being used by the more than 40 latent permits, which were mostly owned by multi-permit companies. Three-quarters of the Fishermen's Ad Hoc Committee's members own either one, full-time scallop permit or only dragger (groundfish) permits. A local attorney represents this organization.

In contrast, the approximately dozen members of the Scallop Group Inc. from the top three ports in Massachusetts, New Jersey, and Virginia own several permits each. This organization lobbied for transferability, including consolidating permits and effort quotas on fewer vessels. The Scallop Group Inc. hired a former council member to be its executive director and representative due to his favorable stand on transferability.

The distribution of costs and wealth in the fishery is the foremost issue for the Fishermen's Ad Hoc Committee, which prevailed when the NEFMC rejected transferability in 1997. Permit consolidation would favor members of the Sea Scallop Group Inc. by reducing fixed costs and increasing each vessel's technical efficiency with more days. In contrast, the majority of scallopers in the fishery, including most members of the Fishermen's Ad Hoc Committee, would need to buy or lease more days to become efficient. The new value of marketable effort quotas would also strongly favor the Sea Scallop Group Inc.

The division between the two organizations can be appreciated by a closer look at permit ownership, which was approximated from unique telephone numbers and addresses reported by fishermen on their permit applications and from personal knowledge of NMFS port agents. The 357 limited-access permits in 1999 were allocated to an estimated 203 companies, including 147 companies that have 264 full-time permits and account for about 95% of total scallop landings. Within the full-time category, 101 companies owned one permit each, or 38% of all full-time permits. Another 37 companies owned 2–5 permits each, or 35% of the total. In contrast, only 9 companies owned 6–10 permits each, which amounted to 27% of the total. The range of potential marketable wealth among companies that own full-time permits in the multi-million dollar fishery is as much as 10:1. In addition, each vessel shed by a multi-permit company would save about \$200 thousand a year in fixed costs.

Permit concentration in the scallop fishery was measured with the Herfindahl index, $H = \sum s_i^2$, where s_i is the share of total effort allocated to firm i . H approaches 1 either as the number of firms decreases or as ownership is distributed less evenly. The prevalence of small firms in the scallop fishery is indicated by the small concentration index, $H = 0.011$.

This result and the scallop industry's inability thus far to negotiate transferable use rights — including ITQ shares while Amendments 4 and 7 were being developed — is consistent with results reported by Libecap and Wiggins (1984) for oil lease unitization (*i.e.*, inter-firm consolidation of production) in Oklahoma and Texas during 1926–35. Common pool losses in crude oil production resemble those in fisheries in terms of costly overcapitalization of too many wells and surface storage containers and of premature dissipation of subsurface pressure which raises extraction costs and lowers recovery rates. Total oil production and firm quotas were privately contracted within two months at the field where there were only six firms and concentration was high ($H = 0.53$). In contrast, the failure to contract privately at the oil field site where there were 147 firms and $H = 0.017$ led to state regulations which were ignored by leaseholders, except during periods of martial law. The similarities between the latter oil field and the scallop fishery are noteworthy.

Outside Parties and the Current Rent-Seeking Landscape

With the battle for transferability still ongoing, the SFA requirements to minimize bycatch and habitat damage have engendered a “rent-seeking frenzy” found also on land where multiple user groups, government bodies, and environmental organizations compete for property right entitlements (Gardner 1997). This section outlines these new fronts.

The unprecedented high biomass of scallops inside the groundfish and scallop closed areas, plus recent unusually high recruitment in open areas, have drawn the attention of other fishermen. Open-access scallopers are demanding an increase in the 400-pound trip limit. In addition, some groundfish fishermen, facing tough stock-rebuilding regulations, are outfitting their vessels to target scallops, according to scallop industry advisors to the NEFMC. The NEFMC, which is dominated by groundfish interests, has thus far rejected all recommendations to limit access in the open-access sector of the scallop fishery that were proposed by its technical team of staff, government, and academic biologists and economists.

At the same time, limited-access scallopers are competing against the groundfish fishery for access to traditional scallop beds inside the groundfish closed areas. The Fisheries Survival Fund organization, whose members reportedly own more than 150 of the full-time scallop permits and include vessel owners from both the Fishermen’s Ad Hoc Committee and The Sea Scallop Group Inc., successfully lobbied the Secretary of Commerce for temporary access to the high biomass of scallops in groundfish Closed Area II in 1999. Restrictions were placed on the opening, however, because of habitat for juvenile Atlantic cod, gear conflicts with the lobster pot fishery, and groundfish bycatch. The small bycatch quota for yellowtail flounder closed the Closed Area II fishery when only two-thirds of the scallop quota was reached. Access to each groundfish closed area was granted again in 2000 under similar restrictions, but the NEFMC has already decided against future openings until the groundfish and scallop plans are amended.

Finally, rent-seeking is not limited to pecuniary gains (Benson 1984; Boggess 1995). Environmental organizations, in general, seek legal standing on behalf of the American public through the courts (Baker and McKee 2000). The Fisheries Survival Fund and other groups of commercial fishermen are hiring lawyers and consultants to protect rents against a marine environmental lobby.

This contemporary case of rent-seeking stems from requirements of the SFA to conserve and enhance “Essential Fish Habitat” (EFH). The NEFMC’s omnibus amendment, and 21 other EFH amendments around the country, were judged illegal in 2000 by a U.S. District Court in a case brought by the American Oceans Campaign (AOC) and eight other environmental and fishermen groups, including the National Audubon Society, the former Sierra Club Legal Defense Fund, and the Cape Cod Commercial Hook Fishermen’s Association in Massachusetts. A court order enjoined NMFS from enforcing the amendments until it and the councils evaluate alternatives that reduce bycatch of even incidental and uneconomic species and limit damage to the geologic and epibenthic structures of the sea floor, including creating new “Habitat Areas of Critical Concern” (HACCs), such as the juvenile cod HACC in Closed Area II.

Other lawsuits filed jointly by the AOC and the local, Boston-based Conservation Law Foundation were directed specifically against the scallop fishery. These organizations failed to stop two regulatory actions (called frameworks), which maintained the full-time effort quota at 120 days (preventing a reduction to 51 days) and opened the three groundfish closed areas to scallopers in 2000. Nonetheless, scallopers were “annoyed over having to expend more time and resources to hang on to a fishery they had finally gained access to only after significant cooperative re-

search with scientists and long hours with the New England Fishery Management Council.”⁵ A third suit against the action which opened the two scallop closed areas in 2001 has likewise failed. In each case, the Fisheries Survival Fund intervened as a defendant with NMFS.

Concern over the impacts of dredge and trawl gear on marine ecosystems has also led environmentalists and some scientists to push for marine protected areas (MPAs), including reserves where commercial fishing would not be allowed. President Bush recently retained President Clinton’s Executive Order 13158 which directs federal agencies to develop a national system of MPAs. The Center for Marine Conservation in Washington, D.C., and the Marine Conservation Biology Institute from Washington state adopted scientists’ recommendations for 36 MPAs in the Northwest Atlantic Ocean. The proposal encompasses 29% of the ocean floor off the coasts of New England and Canada’s Maritime Provinces, including the traditional scalloping grounds on Georges Bank. If made law, the Seabed Protection Act (H.R. 3059) would make part of this proposal a reality in New England waters by placing a moratorium on fishing with dredge or trawl gear in southern New England waters and parts of the Gulf of Maine.

A Broader Perspective

Marine fisheries provide a laboratory for the study of competitive rent-seeking and property rights formation. Capturing rents from common pool resources is a strong incentive for fishermen to lobby for changes in property rights systems, such as extended jurisdiction, limited-access permits, and ITQs. However, property rights systems are political institutions with implications for the distribution of rents as well as for production (Libecap 1989). Heterogeneity among parties with stakes in the outcome increases the transaction costs of political negotiations and the scope for real change, especially when controlling government agencies do not risk losing some authority (Libecap 1989) or bare the transaction costs (Anderson and Hill 1983).

The sea scallop fishery is only one example of how rent-seeking from within a fishery (distribution of limited-access permits and now claims by the open-access sector) and with outside parties drawn in by spillover effects (groundfish bycatch, habitat impacts, gear conflicts with the lobster fishery) can stymie property rights formation. These same factors operate in other fisheries in the U.S. and presumably elsewhere where numerous and heterogenous parties jointly affect change. For example, the New England groundfish fishery, with its several hundred permits on otter trawl, gillnet, and trawl line vessels, has likewise been managed by effort quotas since limited-access permits were introduced in 1994. It, too, has failed to resolve excess harvest capacity and latent effort or to consolidate permits. Similarly, the Mid-Atlantic surf clam ITQ fishery experienced 13 years of effort reduction after limited entry was established in 1977 to only six hours every other week before the owners of 128 vessels could agree on shares (Wang 1995). In other cases, however, relatively small numbers of mostly homogeneous fishermen quickly negotiated harvest shares. For example, a year after license limitation was implemented in the young Alaska weathervane scallop fishery in 1999, the five, large-vessel companies negotiated a private harvesting cooperative contract independent of the North Pacific Council which allocated shares of the scallop and crab bycatch harvest quotas. Also, the owners of 91 vessels in a relatively new South Atlantic region wreckfish

⁵ See p. 15A of the September, 2000, edition of the Portland (Maine)-based trade paper, *Commercial Fisheries News*.

fishery resolved ITQs shares within a couple years (Gauvin, Ward, and Burgess 1994). Finally, a new plan to manage the Northeast red crab fishery could adopt ITQs as favored by the eight companies; however, the ITQ alternative barely made the list of options due to opposition from the NEFMC.

These examples suggest an opportunity to statistically model the influences of factors such as potential rents, stakeholder heterogeneity and numbers, and agency on the time it takes a fishery to negotiate ITQs, if ever. Complex fisheries that have become overpopulated by harvesters may discover that shares for the small-operator majority are insufficient for technical efficiency. Other property rights arrangements, such as harvest cooperatives, could prove more palatable than ITQs provided there is opportunity to unitize capital and production.

References

- Anderson, T.L., and P.J. Hill. 1983. Privatizing the Commons: An Improvement? *Southern Journal of Economics* 50:438–50.
- Baker, K., and M. McKee. 2000. Increasingly Contested Property Rights and Trading in Environmental Amenities. *Land Economics* 76:333–44.
- Benson, B.L. 1984. Rent Seeking from a Property Rights Perspective. *Southern Economic Journal* 51:388–400.
- Boggess, W.G. 1995. The Poverty of Applied Policy Analysis. *Journal of Agricultural and Applied Economics*. 27:1–12.
- Buchanan, J.M. 1980. Rent Seeking and Profit Seeking. *Toward a Theory of the Rent-Seeking Society*, J.M. Buchanan, R.D. Tollison, and G. Tullock, eds., pp. 3–15. College Station, Texas: Texas A&M University Press.
- Buchanan, J.M., R.D. Tollison, and G. Tullock (eds.). 1980. *Toward a Theory of the Rent-Seeking Society*. College Station, Texas: Texas A&M University Press.
- Cheung, S.N.S. 1970. The Structure of a Contract and the Theory of a Non-Exclusive Resource. *Journal of Law and Economics* 13:49–70.
- Gardner, B.D. 1997. The Political Economy of Public Land Use. *Journal of Agricultural and Resource Economics* 22:12–29.
- Gautam, A.B., and A. Kitts. 1996. Data Description and Statistical Summary of the 1983–92 Cost-Earnings Data Base for Northeast U.S. Commercial Fishing Vessels: A Guide to Understanding and Use of the Data Base. *NOAA Technical Memorandum NMFS-NE-112*, National Marine Fisheries Service, Woods Hole, Massachusetts.
- Gauvin, J.R., J.M. Ward, and E.E. Burgess. 1994. Description and Evaluation of the Wreckfish (*Polyprion americanus*) Fishery Under Individual Transferable Quotas. *Marine Resource Economics* 9(2):99–118.
- Hollick, A.L. 1978. The Roots of U.S. Fisheries Policy. *Ocean Development and International Law* 5:61–105.
- Johnson, R.N., and G.D. Libecap. 1982. Contracting Problems and Regulations: The Case of the Fishery. *American Economic Review* 72:1005–22.
- Karpoff, J.M. 1987. Suboptimal Controls in Common Resource Management: The Case of the Fishery. *Journal of Political Economy* 95:179–94.
- Kirkley, J., R. Fare, S. Grosskopf, K. McConnell, and D.E. Squires. 2001. Assessing Capacity and Capacity Utilization in Fisheries When Data are Limited. *North American Journal of Fisheries Management*, in press.
- Libecap, G.D. 1989. Comments on Anthony Scott's 'Conceptual Origins of Rights Based Fishing'. *Rights Based Fishing*, P.A. Neher, R. Arnason, and N. Mollett, eds., pp. 39–45. Boston, Massachusetts: Kluwer Academic Publishers.
- Libecap, G.D., and S.N. Wiggins. 1984. Contractual Responses to the Common

- Pool: Prorating of Crude Oil Production. *American Economic Review* 74:87–98.
- Lueck, D. 1998. First Possession. *The New Palgrave Dictionary of Economics and the Law*, P. Newman, ed., vol. 2, pp. 132–144. New York: Stockton Press.
- Magnuson, W.G. 1977. The Fishery Conservation and Management Act of 1976: First Step Toward Improved Management of Marine Fisheries. *Washington Law Review* 52:427–50.
- New England Fishery Management Council (NEFMC). 1982. *Fishery Management Plan, Final Environmental Impact Statement, and Regulatory Impact Review for Atlantic Sea Scallops (*Placopecten magellanicus*)*. Newburyport, Massachusetts.
- O'Brien, J.J. 1961. *New England Sea Scallop Fishery, and Marketing of Sea Scallop Meats, 1939–60*. Market News Service, U.S. Bureau of Commercial Fisheries, U.S. Department of Interior.
- Rowley, C.K., R.D. Tollison, and G. Tullock (eds.). 1988. *The Political Economy of Rent-Seeking*. Boston, Massachusetts: Kluwer Academic Publishers.
- Serchuk, F.M., P.W. Wood, J.A. Posgay, and B.A. Brown. 1979. Assessment and Status of Sea Scallop (*Placopecten magellanicus*) Populations off the Northeast Coast of the United States. *Proceedings of the National Shellfisheries Association* 69:161–91.
- Smolowitz, R.J., and F.M. Serchuk. 1988. Developments in Sea Scallop Gear Design. *Proceedings of the World Symposium on Fishing Gear and Fishing Vessel Design*. Marine Institute, St. John's, Newfoundland, pp. 531–40.
- Sutinen, J.G., P. Mace, J. Kirkley, W. DuPaul, and S. Edwards. 1992. *Consideration of the Potential Use of Individual Transferable Quotas in the Atlantic Sea Scallop Fishery. Volume 5 of The National ITQ Study Report*. National Marine Fisheries Service, Silver Spring, Maryland.
- Wang, S. 1995. The Surf Clam ITQ Management: An Evaluation. *Marine Resource Economics* 10(1):93–8.