

INITIAL ALLOCATION OF INDIVIDUAL TRANSFERABLE QUOTAS IN THE US WRECKFISH FISHERY

J.R. Gauvin
Director, Groundfish Forum, Inc.
4215 21st Avenue West, Suite 201
Seattle, Washington 98199 USA
<gauvin@seanet.com>

1. INTRODUCTION TO THE WRECKFISH FISHERY AND ITS MANAGEMENT HISTORY

During the mid-1980s swordfish and tilefish fishermen discovered commercial concentrations of wreckfish (*Polyprion americanus*) on the Blake Plateau, deep fishing grounds located about 120 nautical miles due east of Savannah, Georgia on the Atlantic coast of the United States. Although wreckfish resemble grouper in appearance, they are members of the temperate bass family found in the Atlantic Ocean. They are found only at considerable depths in Northwestern Atlantic waters and are thought to be closely related to striped bass (*Morone saxatilis*) also found off the east coast of the United States. Wreckfish also occur in commercial landings in fisheries off mainland Portugal, Madeira and the Azores Islands.

The initial development of the U.S. fishery for wreckfish is described in detail by Sedberry *et al.* (1993) and the wreckfish fishery management plan (FMP) developed by the South Atlantic Fishery Management Council (Snapper/Grouper FMP Amendment 3), one of the eight regional management councils in the United States (SAFMC 1990).

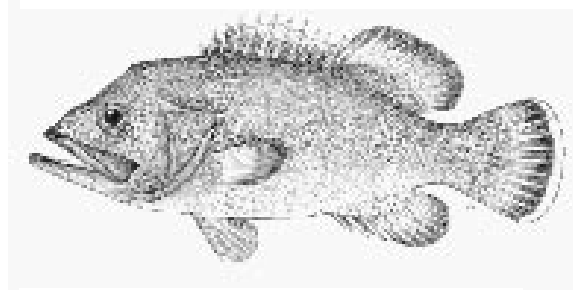
Wreckfish are caught in the northwest Atlantic at depths from 450-600m over benthic structures characterized by rock ridges and relief features extending vertically more than 30m (Sedberry *et al.* 1993). Although wreckfish can exceed 100kg in weight, most taken from the Blake Plateau weigh approximately 15kg (Vaughan *et al.* 1993).

The fishery was developed by fishermen using hook-and-line gear employing hydraulic reels spooled with steel wire and terminal rigs consisting of a monofilament spine and eight to twelve monofilament leaders deploying a single circle hook per leader. The primary bait used for wreckfish is frozen squid and 10 to 20 kg lead weights are deployed to sink the gear and baited hooks to the ocean floor in a semi-vertical fashion. Typically, four to six hydraulic reels are used per vessel spaced evenly across both sides of the fishing deck. Vessels fishing wreckfish range in length from 15 to 25m (SAFMC 1990).

In some respects, the initial phase of the wreckfish fishery management was similar to other U.S. efforts to regulate commercial fisheries. The fishery developed rapidly with little or no long range planning or control, expanding from fewer than five vessels in 1988 to more than 40 vessels in 1990 (Sedberry *et al.* 1993). In the spring of 1990 a rapid influx of refitted shrimp trawlers and the concurrent introduction of bottom longlines by some fishermen resulted in increased landings and harvester conflicts (SAFMC 1990). With the addition of vessels from the shrimp fishery, managers estimated that as many as 60 to 70 vessels were geared to fish for wreckfish in 1990-1991, two years prior to ITQ management (SAFMC 1991a). There were approximately 90 vessels permitted to fish for wreckfish the first year that permits for the fishery were required (Gauvin *et al.* 1994).

To establish control over the burgeoning fishery and attempt to resolve user conflicts, the first of a series of fishery management plan amendments was approved in June of 1990. These initial measures were "fast tracked" by Federal Emergency Rule to "prevent a fishery that would seriously interfere with the necessary protection of the resource" (United States Department of Commerce 1990a,b). The fishery management plan and emergency rules established several management measures including: an April to April fishing year, a two million pound total allowable catch (900t) for the 1990-1991 fishing year, a prohibition on use of bottom longline gear for wreckfish, and a vessel catch per trip limit of 10 000lb (4100kg). Even with these emergency measures, the fishery exceeded the TAC by landing roughly 3.6 million pounds (1600t) during 1990-1991, effectively catching fish faster than the new regulations could be implemented. From that point in time forward, fishermen continued to press managers for measures to address declining earnings and increasing user conflicts (SAFMC 1991a).

Wreckfish
(*Polyprion americanus*)



Source: Robbie Cada

Managers moved in response to the rapid expansion and expeditiously requested public comments, and developed measures for different proposals for limited entry and individual quota systems during 1991. The end result, achieved approximately one year later, was the development of an individual transferable quota (ITQ) system for wreckfish, only the second such programme implemented for a fishery under federal management in the United States.

This paper evaluates the process of how the initial rights were distributed in the ITQ programme and several aspects of the nature of rights and consequential effects of the initial allocation decisions. Information on the initial allocations is drawn principally from three sources: the fishery management plan amendments developed by the management council responsible during the development of the wreckfish ITQ programme, and two separate follow-up studies (Gauvin *et al.* 1994; Richardson 1994) of the programme describing different aspects of the intent and outcome of decisions affecting initial allocation of individual transferable rights to wreckfish harvests.

The focus of this analysis is limited to the first five years (1990-1994) of the fishery because roughly four years after the ITQ system became effective, the fishery, in effect, began to collapse. Because the failure of the fishery is not likely directly related to ITQ management, the fishery still serves as a reasonable case study for the issues of initial allocations and share concentration. One has to recognize, however, that the collapse probably influenced both the equity and efficiency of the initial allocation and incentives for share concentration in the long run. The reason for the failure of the fishery is not known exactly but fishermen and managers cite several possible explanations. Below, I have reported, without prejudice (I hope), some of the leading opinions to explain the fishery's demise. These opinions represent the current thinking by fishermen and managers as conveyed by R. Mahood, Executive Director, South Atlantic Fishery Management Council (SAFMC).

One explanation is that the fishery suffered from an initial overestimation of sustainable yield from the "stock"¹ (assuming wreckfish off the southeastern United States is a separate stock, a question that has never been resolved). Hence, according to some managers and fishermen, wreckfish are no longer found in concentrations that support economically feasible harvests. Another explanation is that former wreckfish fishermen are taking advantage of more profitable inshore fishing opportunities in lieu of exercising their options to fish wreckfish. Still others contend that the ex-vessel price does not adequately compensate fishing operations. Whatever the reason or combination of reasons that might best explain the situation, I will focus on the first few years of the ITQ fishery because participation in the fishery today is apparently limited to one or two full-time vessels per year. Although the annual total allowable catch has been maintained at the two million pound level, only approximately one-tenth of that harvest has been achieved in recent years (1999 and 2000).

2. NATURE OF RIGHTS PRIOR TO AND UNDER ITQ MANAGEMENT

Before ITQs, the fishery was virtually uncontrolled, particularly since the aggregate annual catch limit for the fishery first constrained the fishery only one year prior to the formation of the ITQ programme. As the fishery developed, the rapid expansion in participation and catch rates prompted fishery managers to implement control measures to stem harvest rates and user conflicts. These measures generally failed, however, to address declines in economic returns to fishermen. Trip limits probably contributed to the erosion of profits, especially for the larger vessels, which according to public comment, would operate more profitably if allowed to catch more than the allowed amount of fish per trip (SAFMC 1991a, 1991b). The erosion of economic performance as a result of the fishing derby itself, and the manner in which the trip-limit quantity of harvest affected vessels of different sizes, are identified as key considerations in the selection of objectives for the ITQ plan (SAFMC 1991a). Related objectives of the plan are economic efficiency, long term incentives for resource conservation, reductions in user conflicts, and lower management and regulatory costs.

The documents summarizing public comment during the development of the ITQ plan amendment elaborate on concerns of fishermen regarding the erosion of earnings in the fishery. Of note are comments submitted by fishermen claiming to have developed the fishery. These comments state that the lack of real restrictions on entry and effort, in conjunction with rules established to make the fishery more manageable under open access, contributed to the loss of economic viability on an individual-firm basis (SAMFC 1991b).

The requirement for harvester permits in the fishery implemented in 1990 also failed to create an effective barrier to entry and exclusivity of rights because virtually anyone could obtain a permit simply by filling out and submitting an application to the Southeast Regional Office of the National Marine Fisheries Service (NMFS) and paying what amounted to a nominal fee for the processing and handling of the permit application. In fact, the Magnuson Fishery Conservation and Management Act, as it stood when the wreckfish ITQ programme was

¹ See Connor, this volume for a similar tale regarding orange roughy – Ed.

developed, expressly prohibited the NMFS from collecting fees in excess of the costs of processing and handling permit applications (SAFMC 1991a).

The prohibition on collecting fees even extended to the collection of fees or resource royalty/rent recapture once ITQs were in place, a limitation that according to the management plan amendment establishing the ITQ system, troubled some managers and temporarily served to persuade some council members not to vote in favor of an ITQ system (SAFMC 1991a).

Once the ITQ programme was established, however, the rights provided to harvesters were relatively free from restrictions. Rights were assigned in perpetuity and allowed to be traded freely to anyone, regardless of whether or not that person or business entity was able to document ownership of a vessel in the United States (SAFMC 1991a).

ITQ rights were granted as a percentage share of the annual TAC. Recipients received a percentage share certificate and paperwork entitling them to the quantity of wreckfish (annual individual quota) for a given year amounting to the shareholder's percentage share of the annual total allowable catch.

The only limitation placed on the rights distributed by the initial allocation was that recipients had to be qualified wreckfish fishermen (see below), and that no single entity could receive an initial allocation of more than 10 of the 100 (*i.e.* 10%) of the shares initially distributed (see below). An additional minor requisite was that leases of annual rights could only be between permitted wreckfish fishermen. This leasing restriction amounts to little more than a requirement that the owner of a vessel not granted an initial share had to complete the appropriate paperwork in order to fish for leased wreckfish quota.

There are several statements of intent in the management plan that appear to be aimed at further limitations on the rights granted to qualified wreckfish fishermen under the plan. These are, ostensibly, guidance to the NMFS rather than actual elements of the management plan. For instance, in several places the plan notes that it is the Council's intent that major violations of the ITQ regulations be met with forfeiture of the shareholder's permanent rights in the fishery (*i.e.* their percentage shares) (SAFMC 1991a). Another similar statement is that management fees and royalty or economic rent extractions should be considered for the wreckfish fishery under ITQs if, and when, such collections become allowable under the applicable laws governing fishery management (SAFMC 1991a). While possibly helpful for the NMFS' interpretation of the intent of the plan, in reality, the Council members recommending the plan for final approval by the Secretary of Commerce actually have no purview over the matters of enforcement and collection of fees. Those areas of management are the responsibility of the NMFS Enforcement branch and NMFS respectively.

3. POLICY OBJECTIVES OF THE INITIAL ALLOCATION

Although the management plan is not explicit as to the policy objectives of the initial allocation, the intent of managers can be gleaned from the plan's objectives, regulations governing the ITQ system and consideration of how issues raised in the public comment were addressed in the final plan. In particular, the overt decision to allow free trade of shares under ITQs, and the single area where the Council did opt for restrictions on the initial allocation, (that no one entity could initially receive more than 10% from the initial allocation), are instructive as to the intent of managers for the initial allocation. In effect, the Council appears to have intended an unrestricted market to sort out participation in the fishery after the initial allocation.

For the initial allocation of rights, managers opted to weigh factors such as historical participation and current participation. These factors were, in fact, required by language in the Magnuson Fishery Conservation and Management Act, as the Act read at the time the wreckfish programme was developed. Given that the plan acknowledged that there were more vessels in the fishery prior to ITQs than the fishery could support and economic returns were thought to be rapidly declining, the implicit policy objectives of the initial allocation were to allow free trade of wreckfish shares among a pool of participants deemed too large for the fishery to support. This, one can surmise, was expected to resolve the problem of overcapitalization and it was hoped resolve associated problems that open access had engendered in the fishery. Although not stated explicitly, it seems evident that the intent of the Council was to allow the market for shares to compensate, in some measure, late-comer fishermen for their gear expenditures and other investment in the fishery. At the same time, the market for rights would promote the exit of less efficient harvesters, thereby allowing for a more efficient and more profitable fishery under ITQs.

4. PROCESS USED IN DETERMINING THE ALLOCATION

The process for determining the initial allocation of rights was accomplished through the normal public process for the development of recommendations by regional management councils as set out in the Magnuson Act. Councils in the United States are charged with recommending to the Secretary of Commerce management

measures for federally managed fisheries in their respective regions of the country. The SAFMC became involved with the wreckfish fishery after several fishermen came forward with testimony about a rapidly increasing fishery and conflicts in the unmanaged fishery (SAFMC 1990). Although the plan for ITQs was developed and implemented in just over a year, the elements of the programme, and specifically the initial allocation of rights, were on the agenda and discussed at four separate council meetings lasting approximately one week per meeting. Development of the wreckfish plan occupied roughly 10-12 hours per meeting, according to the documentation in the final plan proposal (SAFMC 1991a).

The 1991 management plan establishing the Council's recommendations for the ITQ programme describe the public record upon which the problem statement and objectives for the ITQ programme are based. The record includes the testimony of fishermen during seven public hearings that were held in different ports in southeastern states within the Council's area of jurisdiction. These public comment hearings were announced in Council's newsletters and held both in conjunction with, and separate from, regular council meetings.

The plan recommending the final ITQ system also presents considerable documentation of public participation, supplies some of the catch data and, to a lesser degree, the available information on declining economic performance in the fishery when as many as forty vessels or more were fishing for wreckfish prior to the final decision to approve ITQs. All of this information is described as meeting the "best available data" standard required of the fishery management process governed under the Magnuson Fishery Conservation and Management Act.

In addition to oral testimony the documents refer to considerable information the Council received through written comment. This information details problems in the fishery leading up to the ITQ as well as comments on the proposed plan (SAFMC 1991b). Overall, this record can be summarized as supportive of the ITQ programme itself. Where there were obvious differences in opinion, as might be surmised, was on the subject of the initial allocation.

Comments from persons describing themselves as early participants in the fishery, claiming to be responsible for the initial discovery of the wreckfish in fishable concentrations and development of the gear used to catch them, generally focus on the perceived inequity of the initial allocation of shares. These individuals favored an initial allocation based solely on historical catch as recorded on state landings management documents called "fish tickets".

Those whose self-described history in the fishery was more recent, generally were more critical of the need to move forward with an ITQ programme. These individuals felt that growth of the fishery would be self-controlling as economic conditions in the fishery evolve. These newer fishermen reported that they had made considerable investments in gearing up for wreckfish and thus should be provided some additional opportunity to learn how to fish for wreckfish and recover the cost of their investment in the hydraulic gears, cable and other wreckfish-specific gear. This group was generally in favor of an ITQ system, however, only if the initial allocation of rights was equal across all current participants in fishery.

Another position expressed mostly in written comments by fish processors raised broader concerns over ITQ management. In their comments, processors felt that the system could give excessive market power to fishermen, possibly creating the disenfranchisement of processors. Other processors commented that they had full or partial ownership in vessels, which would alleviate the market advantage that fishermen might receive. Some processors felt the ITQ programme might force them to acquire ownership or control of vessels holding wreckfish shares and some even "promise" that processors will own all the wreckfish shares in a short period of time if the programme is enacted.

One final area of comment from processors was a recommendation not to move forward with a unilateral ITQ system for wreckfish, but to develop a more comprehensive ITQ system for all the deep water snapper and grouper species, the swordfish fishery, *etc.* These comments suggested that a single fishery focus will create inequities for other fisheries, *vis-à-vis* the advantage wreckfish fishermen would have with their "guaranteed" opportunity in wreckfish, which was not shared by other fishermen.

5. ALLOCATION METHOD CHOSEN

The South Atlantic Fishery Management Council's final plan essentially compromised evenly between the two positions on the initial allocation. The plan divided half of the initial shares based on historical catch from 1987-1990 and the other half were divided evenly among qualified participants. The test of "qualified" was based on being able to document any landings of wreckfish from 1989 to 1990. Fishermen's total initial allocations were the sum of the shares received based on the two sets of criteria.

As mentioned before, the only restriction placed on the distribution of shares at the initial allocation was that no single individual or business entity could receive an initial share of 10% or more of the total available shares

(100). In the event that an initial share amounted to 10% or more, the recipient would receive the smallest fractional increment under 10%, and the remainder of that participant's share (based on the two criteria) would be reallocated to the pool of qualified applicants based on the historical and recent participation criteria.

According to the plan, the reason the 10% provision was made was because some of the preliminary state fish ticket data made available to the Council to illustrate the effects of the initial allocation, were thought to suffer from data quality and coverage differences. While preliminary data from three of the four states comprising the management region did not suggest that any initial share would even approach 10%, the Council remained cautious on this issue and opted to keep its initial allocation provision in place (SAFMC 1991a). The Council's objection to the possibility of an initial share of the magnitude of 10% is interesting given that the Council's plan clearly allowed for the later accumulation of shares in excess of 10%. In fact, the Council's plan allowed for essentially unlimited accumulation of shares unless some anti-trust concern was triggered (SAFMC 1991a). If extreme share accumulation did occur, then according to the Council's plan, existing United States law should be used to identify problems and construct remedies to any anti-trust concerns (SAFMC 1991a).

6. DATA REQUIREMENTS AND COMPUTATION

Given the brief historical existence of the fishery, the relative problem posed by data limitations was probably small compared to ITQs developed for other fisheries. Overall, the wreckfish industry involved a fairly small potential number of vessels and because these were the region's larger, and hence higher profile vessels, it was generally believed that landings data were of adequate quality for assigning initial rights (SAFMC 1991a).

The SAFMC's plan set up the allocation process based on dividing up the pool of catch as claimed by the personal records of applicants (documented through their landings receipts and other means) and verified by available state agency data. An important consideration for this approach was that the overall pool of catch for the historical portion of the allocation was not the actual overall catch of wreckfish fishermen, but the pool of catch submitted during the application period that passed verification. So the universe of historical catch was what was claimed by fishermen's applications. This meant that once the application period had expired, an individual who could document catch but who had failed to properly submit a timely application essentially was left out of the initial allocation.

This initial allocation scheme made no provisions for a "hold back" system to accommodate late applicants or later grievances of any sort. In fact, there were no late applications for participation in the wreckfish ITQ programme, so the problem of how to accommodate such a claim never arose. In addition, no legal challenge to the constructs of the initial allocation system for the ITQ programme or the application process itself was ever made (R. Mahood, Executive Director, South Atlantic Fishery Management Council, pers. comm.).

Through its plan, the SAFMC arranged for receiving applications itself and then forwarding the materials to the Southeast Regional Office of the NMFS. An interesting note on the data requirements for applicants is that the wreckfish plan also required applicants to submit a copy of the portion of their federal tax returns that detailed revenues from fishing over the period of record for the landings claimed in applications (SAFMC 1991a). While this tax form information was described as part of the "requirements" for applicants, it is not known whether such information was used as a corroborating piece of information regarding the validity of the other materials in an application, or a criterion against which applicants could be denied some or all of their initial shares.

In fact, for most tax forms for single proprietorship businesses, and even some categories of corporate tax forms for small corporations, a signature is not required on the detailed revenues portion of a tax return, and in some cases, fishery-specific revenues are simply part of a worksheet. For this reason, it is unclear exactly how this information was used in the application process. Once again, no legal challenge was made of the validity of the applications process or the elements of the requirements and applicable confidentiality issues (R. Mahood, Executive Director, South Atlantic Fishery Management Council, pers. comm.).

The application process provided approximately three months for completion and submittal of application materials. According to the plan, the SAFMC staff would collect the application materials and review them for initial completeness. While the plan explicitly states that the Council staff would have no role, formal or otherwise, in judging the merits of applications (as that responsibility fell to the Southeast Region of the NMFS), the SAFMC staff's role was apparently one of providing the service of pre-deadline notification to applicants if some portion, or some necessary information, was missing.

7. APPEALS PROCESS

The role of judging applications was handled by the Southeast Region of the NMFS. Southeast Region employees prepared recommendations on the acceptability of application materials and initial estimations of

historical catches during the period of record. The NMFS personnel apparently reviewed fishermen's catch estimates based on their receipts and compared these to finalized state landings information and (presumably) tax records. In the end, the process used to review applications is hard to depict because it is only outlined in a cursory manner in the Council's plan and Federal Register notices describing the applications process.

Once initial judgements were made by the NMFS, the agency informed applicants of the determinations made on their applications and their initial share estimates prior to the end of the established appeals period. The NMFS notified applicants and the public at large that it would convene an "applications oversight committee" comprised of the NMFS personnel. The plan also states that SAFMC members who were state agency representatives were invited to serve on this extraordinary board (SAFMC 1991a).

The plan states that the mission of the oversight committee was to judge whether the determinations on applications were correct in terms of the processing of the information submitted, and the judgements made on the available information (SAFMC 1991a). The plan makes it quite plain that the oversight committee is not empowered to consider cases where an applicant, for whatever reason, did not submit the proper information or failed to submit an application, but is somehow otherwise thought to be entitled due to extenuated circumstances. The application oversight board apparently was set up to be an accounting check and had no purview to raise or consider cases of "other merits".

The applications oversight committee session lasted about four hours and heard approximately four cases (R. Mahood, Executive Director, South Atlantic Fishery Management Council, pers. comm.). Applicants were invited to attend the review of their own applications by the oversight committee, and some fishermen did so while others raised issues of discrepancies through written materials. It is not known how many of the appeals were successful in terms of overturning the initial decision by the NMFS (R. Mahood, Executive Director, South Atlantic Fishery Management Council, pers. comm.).

8. ADDITIONAL FUNDING REQUIREMENTS FOR THE PROGRAMME

The SAFMC's wreckfish ITQ plan was developed at a time when the National Environmental Policy Act standards for analysis and documentation of public and private costs of management alternatives were notably less extensive than today's standards. The plan does devote a brief section to this issue and lists approximately \$65 000 in costs associated with development of the plan, applications review, development of the percentage share documentation certificates and annual quota "coupons", and documentation of share transfers. The area of enforcement costs for the programme is referenced, but enforcement costs are not estimated for the ITQ programme because these costs are assumed to have already been accounted for under the earlier management measures put in place for wreckfish (enforcement of the trip limit system and the prohibition on the use of long lines). Given the likely changes in incentives in the fishery under ITQs, it is doubtful that there were no added enforcement costs compared to an existing trip limit enforcement system, but according to the plan documents, the NMFS and Coast Guard did not attribute any specific new costs to ITQ enforcement.

9. EVALUATION OF THE INITIAL ALLOCATION PROCESS

Richardson's (1994) study of the wreckfish ITQ system devotes considerable attention to the policy intent of the initial allocation formula and resulting equity and efficiency considerations of the initial allocation. His conclusions pose interesting questions for the merits of the "split the baby" approach to the initial allocation that was employed by the SAFMC, based on competing criteria such as recent and historical participation. In essence, the Richardson study reads between the lines to some degree and assumes that the SAFMC implicitly intended to compensate the late entrants (mostly dedicated shrimp vessels) for their investment in wreckfish gear. The paper posits that this is the reason the Council based half the criteria for initial allocation on simply having any landings of wreckfish during the 1989-1990 period (Richardson 1994). The equity and efficiency of this approach is evaluated by Richardson using share transaction prices from a dedicated survey of wreckfish fishermen as well as cost and earnings data collected for his study. The survey directly inquired about costs that wreckfish fishermen paid to obtain shares, and particular focus is made on the issue of how much it cost the core of dedicated wreckfish fishermen to regain their actual current level of wreckfish landings (what they were catching prior to the ITQ programme).

Richardson's study presents convincing evidence that the cost of regaining historical catch levels was significant for dedicated wreckfish fishermen and recent participants were likely more than compensated for their gear investments. If the share transaction data presented by Richardson accurately reflect what occurred, then the initial allocation significantly reduced the amount of fish available to many of the larger share holders compared to what they were catching the year just prior to the ITQ programme. This likely served to guarantee that wreckfish fishermen who lost catch quantities through the initial allocation would be strong bidders for additional rights to wreckfish landings.

While this may indicate that dedicated wreckfish fishermen were willing, and possibly eager buyers, the reported prices paid for wreckfish shares are still not completely explained by the “shortage” that was apparently induced by the allocation formula. For some reason, vessel owners who elected to sell out at the outset were able to sell their rights to the core group of dedicated wreckfish fishermen at extraordinary prices. Based on cost and earnings data reported in the study, prices for transactions of permanent rights suggest that it would take the buyer an extended period to recover the investment, particularly if a discount rate of 10% were employed to the stream of expected profits estimated from the performance data. This finding conflicts with other studies on ITQ programmes where initial sellers of ITQs are expected to capitalize only a fairly modest portion of discounted future net returns from the sale of initial shares (Muse and Schelle 1989; Geen and Nayer 1989).

This skewed market solution for wreckfish rights may have resulted from some unknown and unexplored market imperfections inherent in the programme. Alternatively, sellers, who were generally new to the fishery, may for some reason have had better information about the actual extent of the wreckfish resource or its market. This is, of course, counter intuitive because dedicated wreckfish fishermen would be expected to have a better notion of the state of the resource or even the relative strength of the market for wreckfish. In any case, studies evaluating performance of ITQ systems have noted the inherent difficulty for ITQ valuation when resource abundance is not well understood or annual harvest levels fluctuate widely (Copes 1986, Squires *et al.* 1995). While one can expect that markets would not function well under resource uncertainty, the more likely outcome based on studies evaluating ITQ performance would be lack of trading of rights or low prices for trades. What apparently occurred with wreckfish was that buyers were, for some unknown reason, extremely “bullish” on the future of the fishery and sellers, who were less experienced with the fishery, seemed to have a much better ability to accurately assess the future.

In the end, the findings from Richardson’s report suggest that the core wreckfish fleet suffered from the burden placed on them to buy out the recent participants in the fishery. Richardson believes that this problem may have had some insidious effect on the functioning of the market for shares and the programme overall. While this is possible, it is also possible that the effects on dedicated wreckfish fishermen of purchasing shares from recent participants placed an extra burden on them in the face of a declining or initially overestimated resource base. If whatever factor that affected the fishery did not become evident until after share purchases had occurred, then it is possible that purchases of shares from recent participants did strongly favor the seller over the buyer. If, in fact, the collapse was due to an overestimation of the resource base, then this is an example of the dangers of managing a fish stock with an assessment model that was based primarily on CPUE data, especially for a schooling fish such as wreckfish. Assuming whatever caused the collapse had not occurred, however, then one can only speculate about how the “equity” formula used for the initial allocation of wreckfish rights would have been judged in the long run.

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