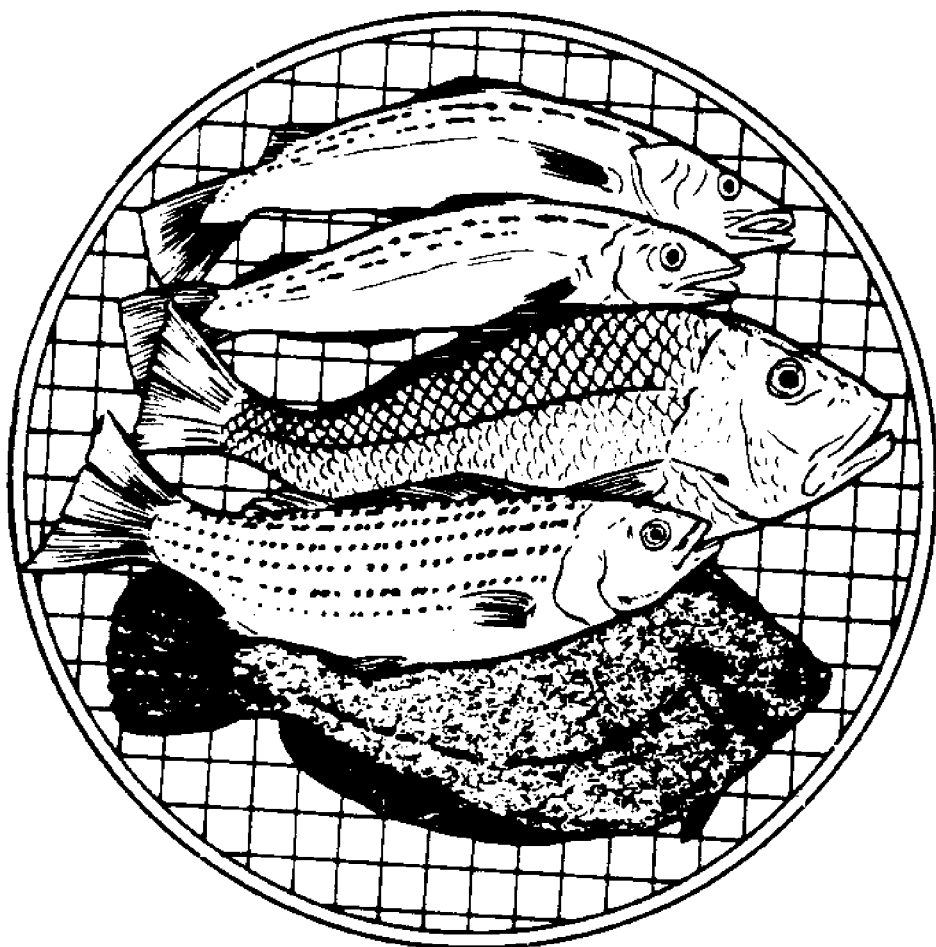


**Decision Guide
to
Individual Quota (IQ)
Management of Fisheries**

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Kenneth J. Roberts

Decision Guide
to
Individual Quota (IQ)
Management of Fisheries

by

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Louisiana Cooperative Extension Service
Louisiana Sea Grant College Program

April 1995



Louisiana State University
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INTRODUCTION

The story is a familiar one. Fisheries managers consider information and propose regulations. Fishermen comment on the proposed regulations. The regulations often fail to yield the expected benefits. Fishermen then become critical of existing regulations. They search for new approaches to the problems.

Individual quotas (IQ) is one of the new fishery management approaches in the Gulf of Mexico. The quotas are for a share of an allowable catch. An IQ can be for a fisherman (IFQ) or vessel (IVQ). When the individual quota is transferable (T), it is called an individual transferable quota (ITQ). Transfers to whom? Transferable in whole or in part? Transferred permanently or just leased to others? These alternatives can be confusing.

New approaches can be confusing and difficult to explain. As James Crutchfield from the University of Washington said:

“Finally, introduction of a quota system on a substantial scale would require an educational program that would be both costly and time consuming. Fishermen are not prone to jump at new ideas particularly if the impact on the individual is both complex and uncertain.”

Crutchfield's words of caution apply to both the fishermen and the managers. Both must be aware that educating and learning about something new takes time. To rush new ideas benefits no one.

This publication is designed to help fishermen and managers think about the elements of IQs. It is an education tool, a piece of information. The personal time of managers and fishermen is still required. Unless other information is obtained, IQ's will remain complex and confusing. By reading and discussing, uncertainty will fade. The publication was written to make the topic of IQs less complex and less uncertain.

To do so, the publication emphasizes reasons for caution. It is designed to highlight fishermen's viewpoints and help them evaluate a proposed program. This is more important than merely justifying IQs.

Examples from IQ programs worldwide and the U.S. make the material real. There are many different applications of this program.

People supporting IQs have a challenge. It is to explain how the theory of IQs actually works. Pointers to stimulate these reality checks are in this publication.

OVERVIEW OF THE THEORY

What is the problem?

Fishermen are familiar with the problem, at least they know the problem as explained by fisheries managers. Too many people and their gear are impacting fish stocks. Some species are affected more than others. For example, the problem might be described as a decline in a species or slowed recovery due to overfishing. A large recreational catch of the species worsens the situation. These situations may indicate that typical regulations are not working.

Improving economic efficiency in U.S. fisheries gained importance after 1976, when the Fisheries Conservation and Management Act (FCMA) passed Congress. The act provided for the possibility of using limited access as a management method for fisheries in federal waters. Limited access is offered as a cure. Access can be limited in two ways. One way is to cap the number of licenses. The other way is to give fishermen individual annual quotas.

An IQ program is a form of limited access. Since 1990 three IQ programs have been established for marine fisheries. The first was in the surf clam and ocean quahog fishery. This mid-Atlantic program was followed, in 1992, by a wreckfish IQ in federal South Atlantic waters. In late 1994, the halibut and sablefish fishery was approved for IQs. You can check on progress of these programs by contacting the fishery management council for the Mid-Atlantic, South Atlantic or North Pacific. Their addresses are listed at the back of this publication.

Recommendation

Understanding the application of the concept of limited access to a particular fishery is important. If IQs for your fishery are proposed, ask for an explanation of need. People promoting IQs should know and explain the need in order to a.) design the program, b.) determine when the program's goals have been met. When needs are defined, the national benefits can be distinguished from benefits to local fishermen. Although this may seem like a minor point, remember that IQ fishermen may be taxed to support the program. They will want to pay only for the benefits they receive.

Why choose IQs?

Fishery managers can answer this question. Fishermen may also answer it. Either managers or fishermen could propose IQs if using this management method fits the need and the goals. Whoever proposes IQs should also be able to defend the proposal. Asking about benefits can yield answers about:

- a. the size of benefits
- b. how quickly benefits occur

- c. how long benefits last
- d. who benefits, owners? captains? crew? U.S. economy?
- e. special taxes or fees
- f. alternatives to IQs and their benefit.

When answers to a-f are clear, and an IQ appears to be a good management proposal, both fishermen and managers should focus on details of an IQ program. Too often fishermen first focus on details of how the program would work day to day. This overlooks the benefits issue. But if a fisherman cannot find benefits, program details do not matter. Without benefits, the program should not be accepted or adopted. Accept or reject IQs on the basis first of benefits, then of costs in proportion to the benefits.

The costs to the fishermen are related to those details. The details describe how the program would work. Do not reject IQs on the basis of details, that is costs. Compare the benefits and costs. You must look beyond this year's costs. Benefits and costs for the life of the IQ are important because benefits change with time.

Information about IQ benefits for your fishery may only be apparent after studying your fishery. The theory of IQ benefits provides only quick answers. This theory must be analyzed according to your fishery. Analysis of a fishery management alternative takes time. You can speed up the process by being specific in your need for information. The fishery managers can then focus on your needs.

Here are a few examples of ways to help managers focus. Ask for an estimate of **benefits per IQ share**. This makes sense to fishermen. Otherwise only references to **benefits to the fishery** may be stated. Fishermen are asked to comment on proposed regulations at hearings and on advisory panels. They can not comment effectively without specifics on benefits. The benefits could arise from some or all of the following:

- a. Fish price could increase because an IQ program could extend the harvest period. Before an IQ, fishermen may harvest in a short period, racing each other for a supply of fish before the fishery closes. Catching as much as possible in a short period results in too many fish on the market at one time. It can depress prices. With an individual quota, a fisherman can fish when price is best. You must decide if this situation will occur by thoroughly reviewing the idea in relation to the specific fishery and fishermen harvesting in it. Many of an IQs possible benefits could be due to fish price increases.
- b. Harvesting cost may fall because an IQ allows the freedom to catch fish when cost per pound is lower. Profit would increase. Since an IQ allows much harvesting freedom, the fisherman might be able to harvest at a lower cost and sell at a higher price, further increasing profits. You must decide if this situation will occur.

- c. Revenue received from not fishing is possible under an IQ program when shares are leased. A fisherman may earn more money by temporarily leasing (IQs) shares to others. Health problems, mechanical problems and better profits in other fisheries are reasons for leasing. The fisherman still owns the ITQ privilege but simply leases it out. It is like collecting rent on property because you are not using it. This can be done with all or any portion of the ITQ within a year.
- d. Qualified fishermen get IQ shares. The shares have a market value. The value comes from limiting the fishing privilege. To get into the fishery, a person must buy the privilege. Those owning the privilege will ask for payment to transfer the privilege (ITQ). **Selling the shares results in a one time gain. The gain comes at a cost to the fisherman — he gives up the right to fish for ITQ species.** It would be possible to fish again only by purchasing or leasing shares.
 Those getting initial shares are often said to get a **windfall profit or gain**. Experts disagree about whether or not the windfall exists. The gain from sale of initial shares may simply be payment for future profits fishermen forgo! Is this potential benefit real? A fisherman should ask for help. Ask ITQ backers about the tax liability from initial share sales.
- e. An IQ program can be costly to manage. Enforcement and monitoring of the fishermen and quotas are examples. Taxes or fees may be charged to IQ fishermen. If they benefit individually, they may be charged to run the program.

Recommendation

IQ management will change the business of fishing, and fishermen will be affected. Managers may justify a change in management methods to limited access because of national goals. Fishermen have different interests.

Review IQ proposals selfishly, using a review of possible benefits as identified in this section. When convinced that IQs benefit you in some way, participate in the design of the IQ program. It must be designed to give the benefits defined for fishermen and the fishery.

FACTORS TO MONITOR IN DESIGNING AN IQ PROGRAM

Although an IQ program will not be easy to develop, fishermen must not let this prevent their participation. This is the point at which fishermen must be active. The ITQ program for halibut and sablefish took seven years to develop. The North Pacific Fishery Management Council finally started it in March, 1995. Other IQ programs started after less time, but just as much effort. The wreckfish ITQ program of the South Atlantic Council took less than two years. Be prepared to devote time to designing the program. If design is left exclusively to fishery managers, it may focus on the benefits to national goals rather than benefits to the fishermen. You must protect your own interests.

Your review of a proposed IQ should be thorough and complete. Do not stop when you find something you dislike. Study and review, then decide on the total program. Participate in the design process. Books have been written on IQ management; the following pages single out some significant factors. They are not intended to be a complete description of IQ plans. These will help you review proposals and evaluate ideas in relation to your benefits and needs. Recall that IQ programs should be designed, not copied from a cookbook. The following nine questions should be used in reviewing an IQ system designed to help fishermen:

1. To what extent are fishermen involved in IQ design?
2. What are the criteria for being included in the IQ?
3. Are there means of handling disagreements?
4. Can there be phase-in of the IQ program?
5. What are the business aspects of the IQ?
6. Can IQ adjustments be made when fisheries change?
7. Will the IQ program reduce the need for other regulations?
8. What are the specifics of monitoring and enforcing the program?
9. Are there provisions for discontinuing an IQ program?

These nine questions can also be used to help you design a system. The points serve to focus your attention. Each check point for your attention will be specifically discussed on the following pages.

1. To what extent are fishermen involved in IQ design?

Most of the time, IQs will be proposed through a management agency, most likely the federal government system of management councils.

Individual states could take action on fisheries entirely within their borders. Each level will allow for public hearings.

IQs are too complex and controversial for this approval method alone to be used. The public hearing method limits fishermen to the role of advising managers. While advice is necessary, fishermen should be more involved.

Fishermen need to *participate* upfront in IQ program design. When an already written program is presented to an advisory panel, it appears to be seeking approval, not design. IQ proposals do evolve with review, but the program will be better when designed cooperatively, and then reviewed.

Government-designed IQ programs, when presented for review, focus on national benefits. Since the previous section, *Why IQs?*, noted the need for fishermen to identify personal gain, it is best to include the personal gain potential at the initial design stage.

A program designed by managers for fishermen to review through the hearing process will be less effective because the fishermen have no stake or ownership in the program's plan. Public hearings are essential. Co-management may be discussed in the design phase. Co-management means management becomes a shared responsibility of government agencies and fishermen. It is a big change in approach. In one example, fishermen organizations could be given authority to enforce regulations and impose penalties.

When IQ management is under consideration, get into the design process. The purpose of the program will be clearer to you. A mix of public and private benefit objectives will develop. Involvement in the design process will give fishermen needed information, so that the public hearings, intended to help fishermen, will be improved. IQs should serve the needs of fishermen.

The needs of fishermen, the fishery, and the public will change with time. Review an IQ proposal to determine if co-management will be established at the design phase. If so, reaction to future change will happen cooperatively.

2. What are the criteria for being included in the IQ?

This initial decision point during design is important. Should the IQ criteria be based on the vessel — IVQ, or on the individual fishermen — IFQ? Most IQ programs have focused the criteria on the fisherman because tying a quota to a vessel is less flexible. In fishing, many things change — the fish, the climate, technology. Business flexibility is generally preferred so that profit can be continued amid change. The following discussion will be about qualifying fishermen.

Fishermen must qualify for the privilege of harvesting in the fishery on some basis. The requirements to qualify can limit or promote the success of

the program. For example, the criteria might be the landings — each fisherman must have landed a certain number of the species, actually participated in the fishery. The program might state that landings of a species during a specific period must be proven. But, both fishermen and managers should note that the longer the historical period, the harder it will be to meet all requirements. Historically, open access fisheries have had minimal reporting requirements. How can landings be proved? Is the method of proving the landings designed to help some fishermen, and exclude others?

When you review the part of the proposal dealing with qualifying, ask yourself: Have you been in the fishery during all or most of the period being used? Can you meet the requirements to prove landings? Can most of the commercial fishermen now in the fishery qualify under these criteria? If you see any problems, bring them up at meetings. Suggest a specific change in the criteria to correct problems. This is a key time to devote your attention to detail.

Prove to yourself that you qualify. Go over your catch records, sales tickets, and log books. Do not rely on memory. Attention to this detail early may result in a design change before the IQ is started. Change during design is better than trying to correct things later with an appeals board.

Check provisions of the proposed program dealing with records transfer. If someone has purchased the boat you fished with during the qualification period, try to get rights to the catch records. In fact, do not transfer catch records when selling a vessel unless it is part of the sale.

The provisions of the program dealing with the quality of records should also be checked to be sure they include statements about the best means of proving catch. Higher priority is sometimes given to log books submitted to an agency. Trip tickets may be the next best proof, and fish buyer receipts could be the least acceptable. Assume nothing about your ability to qualify. Determine the quality of your records during the design phase to be certain the criteria doesn't exclude you.

The person qualifying can become a complex issue. Although most fishing vessels are owner-operated, at least some captains fish on shares with owners. If you are an owner or captain fishing under agreement, pay attention to the qualifying discussions to be certain the criteria includes you.

During public review of the proposed red snapper ITQ in the Gulf of Mexico, the question of how to treat shares on a vessel fished by a hired captain was debated. The final agreed-to language in the proposal shows how they settled the issue:

Historical captains are classified as captains operating continuously in the red snapper fishery under a verbal or written share agreement with an owner to lease a vessel from prior to the control date of November 7, 1989 set for the reef fish fishery, who have landed at least 5,000 pounds of red snapper in two

of the three years 1990, 1991 and 1992 and who can meet the more than 50 percent earned income requirement from the year of the control date (1989) to present. The agreement must provide that the captain is responsible for hiring the crew who were paid from the share under his control.

Look complicated? It is, and the stakes are high! Use this as an example of the reason to get involved early.

Records should contain specific information. (1) Specific species should be identified. Slang terms or terms descriptive of many species are unclear. Most of the time, such records will not be accepted in order to protect properly documented fishermen. For example, records of snapper or grouper landings may not be specific enough for species specific programs. (2) Face the potential of having to prove location of catch in terms of federal or state waters because most IQs only apply to federal waters. Even when state and federal fisheries are managed cooperatively, a state agency or legislature could reject a former agreement.

When catch records are on a solid basis, focus on the qualifying time period. Since variation in catch is normal, promote the idea of averaging the catch over the qualifying period — for example three years or the top two of three years. To calculate the average catch over three years, divide the total catch by three; in the second example, add the two largest totals from the three years and divide by two.

Focus on these results in the design phase. Although they can also be discussed at public hearings, criteria as basic as record quality should be discussed early. Many decisions depend upon these records.

If a fishery has poor records overall, or if the records are not good for part of the qualifying period, alternatives can be used. Fishermen could be given equal shares or enough shares to break even. Equal shares, in essence, start the fishery all over again. Each fisherman is treated equally, and the market determines the ultimate size of each one's share. Efficient operators need more shares, and they can justify the expense of purchasing or leasing them. The break even approach to initial shares has been used overseas. It recognizes the different needs and capabilities of various sized vessels. Fishermen receive enough shares to have sales cover costs.

3. Are there means of handling disagreements?

People who fish for a living must deal with people who manage fisheries for a living. Fishery managers really only manage the actions of fishermen; they cannot manage fish. Disagreements between managers and those managed will occur.

Since an IQ program, like any management program, is subject to disagreements, a way to resolve disputes is needed. An appeals board should be designed into the program. Check the proposed program for this feature.

There are several issues to consider when forming appeals boards.

(1) Appeal boards must be comprised of people capable of reaching decisions. Will they be fishermen or managers or a combination? Perhaps people trained in negotiation or conflict resolution would be suitable. This is the first issue to check out. (2) What type of appeals will the board hear? It would be impossible and unproductive for every complaint to be brought before a board. (3) The appeals process must be defined from the beginning. For example, without a specific method through which appeals are submitted to the board, some issues might be missed. (Appeals may be submitted directly or through an agency.) (4) What power will board decisions have? Will the decisions be treated as recommendations, or will they be binding? Where will the decisions be sent? They could be sent to the fishery council or National Marine Fisheries Service (NMFS). (5) The duration or time of existence of an appeals board should be stated in the program. It could operate for the life of the program or it could be limited to a certain period of time. Some programs have established appeals board for the first year or two of an IQ program because most disputes arise early in a new program. The right to be included in the IQ program will be a source of disputes; the initial allocation of shares may displease some people. When this rush is over, the board could be eliminated, furloughed, or convened again annually. If the board has a limited duration, you should inquire about a procedure to reconvene a board when unexpected conflict arises.

An appeals board is better equipped to deal with equity issues. Fisheries managers may be more interested in efficiency while fishermen are more concerned with individual needs. Making social judgments is a good role for the industry members of a board because it serves as a beginning point for possible co-management of the program. A program has many opportunities for joint decision making. The appeals board is the place to start.

4. Can there be a phase-in of an IQ program?

Going directly into IQ management may be too big of a change for fishermen. In the design and hearing process, evaluate all management alternatives. A phase-in period can be developed. For example, part of the total quota could be caught under IQ, while the remaining amount could be harvested competitively. This open amount could be gradually transferred to IQ shares.

A phase-in from another limited access system is another possibility. For example, the start-up of a license limitation program could involve a switch to IQs. This is easier to do when people have the limited licenses. Limiting licenses to vessels may produce a large increase in the vessel's value. A vessel owner would probably be reluctant to enter a program that risks losing a valuable vessel license.

Maintain the review focus on benefits. If direct movement to an IQ represents a big change, explore phase-ins. The perception of large change sometimes causes people to reject IQs before all benefits are reviewed. Don't be diverted from a complete review.

5. What are the business aspects of an IQ program?

Since fishing is a changing business, the impacts on the business should be discussed. The fisherman as a businessman will seek maximum increase in the value of his shares. A proposed program must contain elements that result in good business — duration, transferability, use outside of the fishery, accumulation of power.

The *duration* of the IQ should be clear because the value of the IQ shares will depend on the length of the program. Some programs are of indefinite length — they continue until a formal action is taken to end them. Some have a stated life period and contain an option to re-authorize the program in the future.

The value of the share also depends on its *transferability*. Most IQ programs allow for share transfer, permanently or temporarily. You will have more options when both are allowed. When only permanent transfer is permitted, a person has to leave the fishery when he transfers his shares. If a person wanted to buy additional shares, more money would be required because the value would be higher for the permanent right to quota share.

A temporary transfer is more flexible because it amounts to a lease of shares. It should require less money for buyers, and sellers will not have to leave the fishery.

Fishing is a changing business. Flexibility is necessary to adapt to changes, over the years, in the fishing business.

Explore the possibilities of divisible share transfers — that is, selling, buying or leasing in small amounts. The smaller the amount, the more flexibility you get. What will be the minimum amount transferred at one time? It is best to avoid very small amounts. To control the size of the transfer, the program could set a fixed fee for transfers. This could increase the cost of small transfers enough that people would not make very small transactions. The goal is to allow for a minimum level of transfer that keeps costs low.

Transfers need to be made trouble free. A good ITQ program creates or increases share value. Generally, the fewer the restrictions, the better the market. One type of restriction, waiting periods, has benefits and liabilities. This type of guardian attitude may prevent you from making a bad decision. However, you may not need protection. You have the ability to write a contract to protect yourself; in fact, you are the best judge of your needs. Sometimes a program is set up to prohibit transfer for a specified period at the start of the program because people are thought to be uninformed about values. In your review, devote some effort to evaluating waiting periods.

When a share has value it can be *useful, outside of the fishery*. For example, the share might be pledged to cover debt. The program may have restrictions on share use in order to prevent lenders from gaining shares by foreclosure. You must judge whether you prefer to be accountable for your actions or whether you want the government to prevent lenders from getting fishing shares.

If shares can be collateral, processors may become lenders in order to get shares. Why would processors want shares? Shares represent power because a possible result of a ITQ program is a financially stronger fishery. Power in the hands of fishermen might be an undesirable result from the processors' point of view. Their goals are not always the same as the fishermen's or the fishery manager's.

This *accumulation of power* must be addressed in every ITQ program. Part of the concern is the gaining of excessive power. A limit to the number of shares per owner is one way to prevent a problem. This limit can be set as a percentage of all shares. Businesses could be set up in ways to avoid any limits established. Be sure to also consider: Would leased shares be included in the limit along with those purchased?

Unused shares may require special treatment. Maximum share limits may have to be relaxed occasionally. A species that moves seasonally, can be a problem. Maximum shares and other restrictions may have to be relaxed to allow harvest in these circumstances because shares are used when fish arrive in a particular area. For example, occasionally fish may not arrive in time for an area's shares to be filled. Fishermen who routinely harvest near the end of the fishing year may not have time to transfer their shares to fishermen already harvesting in the area. When there are maximum share limits, the transfers may be further impaired. Thus, in reviewing a proposed program, pay close attention to your location in terms of this type of fishing year conflict.

There also may be a use-it-or-lose-it provision. This is a clause in the program that means if you don't use the privilege to fish under your share, you could lose the privilege. Review a program for information on this issue.

Fish are unpredictable so business owners need the ability to react!

6. Can IQ adjustments be made when fisheries change?

Fisheries change as a result of regulation, often they improve. The fisherman's share, in terms of pounds, needs to change too since a fisherman's share is a percentage of the total allowable catch (TAC).

Most limited access programs are started when a fishery is in poor condition. IQs are considered in order to improve conditions. Fisheries do eventually recover to higher stock levels. An IQ program may speed up the process.

How will fishermen benefit? If a stock recovers and TAC increases, will fishermen get the fish? When IQs are set on a percentage basis, most of the

time, the answer would be “Yes.” Study this carefully to be certain that increased catch is written into the program.

Sometimes increases are withheld. The program may not be working as planned. Catch could be higher than allowable. Overruns may cause the agency to not issue all potential catch increases. Withholding increased catch doesn't solve these problems, which are actually indicators of flaws in the program. Check on this issue by reading documents and asking managers.

A problem can arise when anglers fish for the species in the IQ program. A commercial and recreational catch will be specified. When a stock recovers, the anglers may request a larger share. Since recreational fishermen do not fish under a strict quota, a bag limit may not control the total catch of anglers. In fact, anglers may use quota overruns to prove that their shares are too small a percentage of TAC. Ask for language in the IQ program that prevents quota reduction when TAC increases.

An example of this issue is found in the Gulf. The red snapper ITQ program proposed in 1995 did address the issue. Here's how they specified it in the proposed program:

“As the annual TAC (total allowable catch) and commercial quota increase, each shareholder's quota coupons would be increased proportionately. The value of their share would increase in pounds and value as the stock is restored.” (Draft Amendment 8 to the Reef Fish Fishery Management Plan, May 1995)

IQ management is about improving economic conditions. Do not assume a recovering stock will make you better off. Press managers for clear statements about shares and an improving stock. It is worth the effort. A recovering stock may be the basis for the most benefits from an IQ program.

7. Will the IQ program reduce the need for regulations?

An IQ program changes a fishery because all fishermen receive a share to harvest, sell, or lease. According to theory, fishermen will act more in their collective interest with IQs and require less regulation. Since they are guaranteed a share of the harvest, they can support a broad program and see the value of conservation.

IQ programs can reduce the need for certain regulations. For example, restrictive seasons may not be needed. When reviewing a proposed IQ program, ask about how existing regulations will change in an IQ program.

Previous experiences may prevent the reduction of regulations. Managers may remember fishermen who avoided previous rules. Fishermen may not trust managers to consider their business needs.

IQ programs cannot solve all problems. Some regulations like: (a) minimum fish sizes, (b) area closures, (c) mesh size limits, and (d) fishing

seasons may have to be imposed. It is worth reviewing IQ programs for the impact on existing regulations. Sometimes a reduction in regulations may make the situation worse. IQ programs are all based on regulations. Find out how the IQ regulations affect you compared to regulations under existing or other management practices.

8. What are the specifics of monitoring and enforcing the program?

Programs that create value also increase gain from cheating. IQ programs may increase fish prices, lower harvest costs, provide windfall gains and thereby improve the profit picture. To be fair, it must be enforced and monitored. Managers drafting a program devote more effort to other issues like the need for IQs and the benefits. Enforcement and monitoring elements reflect the cost of a program. A fair analysis of IQs identifies benefits and costs. The program design process often omits careful identification of costs. Fishermen must ask for information on enforcement and monitoring costs.

The estimates should be of the additional costs over those in the existing management program. When the government compares the added cost to benefits, they label a program with benefits higher than costs as *government feasible*. A program that is not government feasible will not benefit fishermen either. Look for other management alternatives.

The analysis of government benefits and costs should include documents like the regulatory impact review (RIR). Each amendment to a federal fishery management plan includes a RIR. When a state program is proposed, the same information may not be available.

The flexibility of IQs gives fishermen more options. From an enforcement view, it becomes more difficult to track their actions. Therefore the monitoring and enforcement system must be improved, and that costs money. Who will pay the higher cost? This is another reason to focus on the cost and benefit estimates of an IQ program. The program designers may suggest that those benefitting from the program, the fishermen, should pay the added costs. Fishermen may agree to pay the costs because they appear reasonable. If the actual costs of enforcement and monitoring turn out to be higher than estimated, fishermen are subject to much higher fees. For example, the halibut ITQ in British Columbia stated that enforcement costs would be equal to 11 percent of benefits. For the fishermen, this was an enforcement cost increase of 1100 percent!

Any incentive to cheat needs to be prevented. Increased enforcement, paid with money provided by fishermen, is one way. Another good enforcement measure is a strong penalty program. Unless cheating is prevented, there will be no confidence that benefits are being protected.

As a shareholder the program must give you confidence. Fishermen have an incentive to prevent others from cheating. A poor enforcement and

monitoring system will reduce the value of shares because people not reporting catch accurately have no incentive to buy or lease shares in order to increase their catch. Share values will be lower than anticipated.

The quality of the catch reporting system must promote effective monitoring. Do not leave this key program element to after thoughts. Press managers for details. Ask them early to devote time to good estimates. The costs and fees to cover these systems are part of your decision. Low costs and fees are not necessarily good. They may reflect vague enforcement, monitoring and penalty planning (EMP). Fishermen can also pay attention to setting TAC. If TAC is set in a way that allows profit to be maximized, cheating will not be a problem.

Co-management has been mentioned before. The EMP element of an IQ program is a possible basis for committee oversight. This is a matter worth discussing in cases where fees are charged to run the program. There may be no means of keeping the fees in the program for management purposes. Support for fees of any amount may be low in such a situation.

You have the opportunity to protect IQ share benefits when you review the program. Look for effective enforcement and monitoring, especially if you pay a fee for them. Inquire about penalties for violators.

9. Are there provisions for discontinuing an IQ program?

Dissatisfaction can build when reality does not match the theory of IQ benefits. The fisherman always has an exit — to sell shares permanently or lease for a period. If things remain unfavorable, then a permanent sale can be made.

A displeased fisherman, when joined by others, may seek a return to pre-IQ conditions. A return is possible. A management agency can create an IQ program. It can also end one! When approving a program, discuss how to end IQs, just in case. A specific means of ending a program may reassure a reluctant fisherman. They may be reluctant because it is a big change in the way he makes his living.

One provision is to return to a license limitation program. The end of an IQ program can then be a return to simple license limitation. For example, the plan can include termination of IQs after a certain number of years. This forces an action to renew or adopt another management program. If IQs are beneficial, fishermen will want to renew the program.

An alternative is to have a set of criteria, in the program from the beginning, for a termination date. When the criteria are met, a review of the program results. The review would determine why the IQ should continue. In that way people know the means to determine program success or failure.

Any means established to review or renew programs must be clear. A vague procedure will do more harm than having no end to a program. When procedures are vague, the value of shares can be eroded as a deadline nears. A co-management committee can help in this case —that is,

fishermen and managers can share responsibility for devising these. Review or evaluation procedures are comforting to those concerned about failure or lost benefits.

The first U.S. program began in 1990; others that followed, in 1992 and 1995. More time is needed to evaluate IQs in the U.S. A renewal and termination section in an IQ program is an excellent safety valve. It should be as easy or easier to end a program than to start one!

IQs AROUND THE WORLD

A brief description of programs in the U.S. and in other countries may help you evaluate the possibilities of IQs for your fishery.

United States

After several years of no new entry an ITQ program began in 1990 for *mid-Atlantic surf clam and ocean quahog fisheries*. Quota was based on historical landings from 1979-88. This is a longer period than usual. Quotas in this program can be sold or leased among vessels meeting minimal license requirements. Harvests are monitored by a tag system. Each government tag contains the landing percentage allowed in the fisherman's quota.

Early results are interesting. Derby fishing has ended and prices have increased. The program has reduced the fleet size drastically. Operating flexibility and efficiency increased in the fishery, but shares are now held by few companies. An increase in foreign ownership occurred through the purchase of corporate fishing companies. After a bumpy start, fishermen are now strong supporters of this ITQ program.

From a few vessels in the 1980s to 40 in the 1990s, *wreckfish* fishing came under ITQ management in 1992. The species is found on the Blake Plateau about 120 miles southeast of Savannah, Georgia.

The quick expansion in the number of vessels seeking wreckfish brought prices for this temperate bass to low levels. Fishing costs were high because of a race for fish.

This was a clean ITQ program to start because there were few fishermen, and no concern over impacts on a recreational fishery. Shares were allocated to vessel owners who had to prove historical catch via fish house receipts and affidavits from buyers. Fifty percent of the TAC was allocated based on landing records. Fifty percent was equally divided between all eligible participants.

Catches are tracked with a coupon system. An automated system debits a fisherman's ITQ account automatically. The wreckfish fishery has become more efficient and less capital is needed. Prices of fish doubled under the ITQ system. As in the mid-Atlantic program, vessels decreased and share prices increased in this program. But, it has only been in operation since 1992.

The newest ITQ program in the U.S. is for *sablefish and halibut* in the north Pacific. After many years of analysis, it was implemented in March, 1995. A target of the program is to end the race for fish which had depressed prices. Fish had to be freezer-stored to stretch supplies over the marketing period. This large ITQ program of several thousand people, in the first year, resulted in the highest prices in the fisheries' history. It will take time to determine the ultimate success of this limited access program.

IQs in other countries

Some support for IQs, in general, is based on experiences in other countries. People supporting a program for your fishery on this basis should explain those other programs. The specifics of programs overseas need to be updated frequently and carefully. IQ programs change because fisheries change, and you need to know the details of the change.

This publication will identify a few programs in other countries to help you direct questions about IQs in your fishery.

To reduce fishing effort and increase economic efficiency, *Canada* has ITQs in the Atlantic, Pacific, Arctic and freshwater fisheries. Individual quotas were introduced in the Lake Winnipeg fishery during 1972. Today, the race for fish appears to have ended and long-term security of fishermen has improved. In 1995 the Canadian government put severe restrictions on its Atlantic groundfish fishermen. Canada's experience in the Atlantic is proof that ITQ programs are not immune from major stock failures.

The most recent (1991) Canadian IQ program uses the IVQ approach — share criteria is determined by vessel. In this British Columbia halibut program, share transfer is not allowed. The program followed a 1979 limited entry system that failed because a derby fishery with high effort depleted the stocks. After adopting the ITQ, the fishery changed dramatically. Instead of halibut supplying a frozen market, the majority of fish can be marketed fresh. Higher prices are the result, and fishermen are not dependent on selling fish at freezing facilities. The program has support among processors and fishermen.

In 1976 *Iceland* began an IVQ program for the herring fishery. Transfers were not permitted until 1979. This program followed a moratorium established in 1972. A similar program was implemented in the capelin fishery where stocks had become depleted. Transfers were again not allowed initially. IVQs for demersal fisheries were added in 1984 following a 1978 license limitation program. Transfers were allowed more quickly in the demersal fishery. Managers note the problem of high grading — that is, the act of discarding fish of a size that bring a lower price per pound. Fleet size has not decreased but fish quality has improved. These fisheries have become more economically efficient.

Australia and New Zealand have adopted the ITQ approach to reaching management goals. ITQs were used in *Australia's* bluefin tuna fishery in 1984. Seiners, pole, and bait fishermen and trollers targeted bluefin tuna. In this case ITQs eased the adjustment to expected declines in catch. Shares depended on catch from 1981 to 1983 and on the relative value of fishing vessels. This criteria, to account for investment level, is unique. Share sales and leases are allowed, and shares can be offered as loan collateral. As a result, the number of fishermen changed drastically from 143 in 1984 to 77 shareholders (with only 10 actively fishing) in 1991. This change in the fishery makes evident the former level of economic

inefficiency. Australia also uses ITQs for prawn, gemfish, trawl fleets and Danish seine fisheries.

Because *New Zealand* has the most recent and comprehensive ITQ programs, they are the focus of much inquiry. Ask questions about successes, failures and trends in New Zealand.

Offshore fishery programs in New Zealand began in 1983, and many of the inshore fisheries adopted ITQs in 1986. Although many New Zealand fisheries have adopted ITQ programs, they do not follow a recipe or standard formula. They are not cookbook programs. New Zealand rules on share allocation, transfers and enforcement differ by fishery although, in all cases, the goals are to promote conservation of stocks and improve economic returns. When reviewing a proposed ITQ program take a lesson from New Zealand and ask: Is the program tailored to meet local needs?

All of New Zealand's programs are still in place. Those started on a temporary basis have been made permanent. The feature, to start with a temporary program followed by a requirement to request permanent status, demonstrates that IQs can be designed in stages. This approach lets fishermen and managers adjust to the programs.

Problems did arise in New Zealand. Program participants asked for modifications to provisions on bycatch, enforcement, quota aggregation, and administration, but termination has not been sought. Despite problems, fishermen in New Zealand realize their shares are valuable assets, their privileges are more secure, and sustainable catches are more likely.

HOW CAN WE DESIGN A SUCCESSFUL IQ PROGRAM?

The IQ approach to management goals has flaws; all management measures have flaws. Programs should anticipate flaws or changes and include methods to deal with them. Those interested in IQ programs need to design programs that are flexible, that can change. Design the program to adapt quickly to changes in the fishery. Also, consider a design that calls for a formal evaluation at some point. A renewal date or procedure to terminate assures that programs are not beyond control. Always seek direct, formal input in design.

The program must serve a purpose. Clear, easy to understand objectives are needed. An end to derby fishing, operation in safer conditions, lowering costs, protecting stocks, and other objectives are worthy. Objectives like these define the purpose and provide evaluation criteria.

IQs cannot meet all management objectives nor can it realistically reduce government regulation. It can improve prices and lower costs from status quo conditions, thus improving profits directly. These would also stabilize economic performance, lowering impacts of depressed market conditions. Have government analysts justify the program. The stated objectives must result in higher benefits than costs to fishermen. The issue then is one of whether or not management can deliver. Fishermen, critical of agency management, should identify and correct shortcomings during the program design stages.

The data system must be suitable to design the program and it must be equitable. To fishermen skeptical about management, equitable distribution of shares must be evident. To assure this, a program could include an appeals period when both hardship and initial allocation sizes could be considered. Or the program could start with equal shares, allowing transfer immediately and in any amount. A few programs start with vessels in size groups. Each group is given a share estimated to permit break even operation. Any remaining TAC can be auctioned.

Shares are not the only equity issue. Attention to historical participation of fishermen is needed. This is the "who" aspect of a program. Captains of vessels who are not vessel owners may have a credible claim on shares.

Fishermen must consider the ethics of their competitors. If programs produce benefits, cheaters will emerge. Enforcement, monitoring and penalties (EMP) must specifically address the possibilities of cheating in an IQ program. Fishermen holding pre-IQ enforcement in low regard should be cautious.

An IQ program increases enforcement responsibility for both fishermen and the government. Can the EMP issue be co-managed through a board or committee? New Zealand used a two-strikes-and-you-are-out policy! Ask for a description of penalties in U.S. programs.

Management decisions in a program are even more critical because most programs focus on economic benefits. The data reporting system must be constructed to provide improved, detailed data. Overlooking this matter may decrease the prospects of getting economic benefits. For example, a system that results in under-reporting has a design flaw. Data must be more accurate and timely to discover under-reporting. Sometimes fees encourage under-reporting. The likelihood of additional discarding by high grading must be considered in the data gathering process. Any additional uncertainty on data quality will make scientists more conservative!

Fishermen need to decide how much protection they want from the government under a program. For example, with heavy protection, share transfer would be highly controlled. Maybe a caution period is needed, or transfers may not be allowed early in a program. A maximum share accumulation is another protection. Transfer policy can be used to get low-catch-rate vessels out of the fishery by forbidding share transfer to vessels with a record below a set amount. This amount also sets a minimum level for those without shares to gain entry.

Fish stocks are often low when IQs are considered; but stocks will eventually recover. How does the IQ program distribute increases in commercial quota? The proposed ITQ program for Gulf of Mexico red snapper addressed the issue. Amendment 8 stated:

As the annual TAC and commercial quota increased, each shareholder's quota coupons would be increased proportionately.

Similar intent is worth including in a program. Shareholder's quota surely would decrease as TAC decreases. You are simply assuring that TAC increases will be similarly treated.

Political realities may conflict with the needs of the fishermen and the fishery. A good program locks in the benefits for existing shareholders, but sometimes political realities may favor people who want new shares to be given to new entrants instead of to existing shareholders. Look at the distribution of shares carefully. Raise questions. Ask for explanations.

The role or impact of increasing recreational effort can put pressure on managers to change the allocation as TAC increases. Benefits commercial fishermen anticipated when approving IQs could be diverted to the recreational sector.

Can trying to end the race for fish be a mistake? The answer may be "yes" in some fisheries. Fish with seasonal movements may be harvested in a series of mini-races. Fishermen may still fish early to reduce risk. Regulations for area openings may still be relevant. If derby fishing will not end, can a fisherman still benefit from IQs? Fishermen must decide the answer.

SUMMARY

Because a list of advantages and disadvantages would have to be tallied on the basis of a person's position in the fishery, this publication focuses on factors that could affect the success of an IQ program. The fisherman can pick advantages and disadvantages from what is presented.

Government management is a reality. IQ management is no longer just a theory in the U.S., it is real. Benefits must be available to fishermen as well as the government. IQ programs should give fishermen more production and investment freedom, which will be more market-oriented. Fishermen cannot use only public hearings to produce gains and protect interests. They must get involved in the design process where a foundation for tuning the program can be established.

Commercial fishing is increasingly viewed as a privilege, not a right. Evaluate an IQ program on the prospect that it can strengthen the privilege. Your participation could lead to better long-term results for you and the resource.

GLOSSARY

administrative fee	The fee paid for processing permit or license applications. Often the fee is limited to the government's cost of using the permit or license.
allocation	Distribution of the opportunity to fish among user groups or individuals. Often based on historic harvest amounts.
appeals board	A group of people appointed to review hardship cases and disputes. These cases can arise when starting an individual quota system.
coupon	The paper exchanged with a buyer when fish are sold. It represents a certain amount of fish. Coupons could be issued in 100 pound, 500 pound or other amounts.
economic efficiency	The point at which the added cost of producing a unit of fish is equal to the price of the fish. Producing fewer fish would bring the cost lower than what buyers are paying. Producing more fish would raise the cost higher than what buyers are paying.
eligibility criteria	The specific requirements that must be met in order to participate in a limited access program.
high grading	Grading fish on the boat to get the highest net revenue per pound. The result is discarding.
historical catch	A record of landings by a fishermen. It can be used to set a fisherman's or vessel's quota.
individual quota	Percentage or share of the resource allocated to a fisherman or vessel. It can be transferable or non-transferable. A transferable quota is known as an ITQ. When given to a fisherman, it is referred to as Individual Fisherman Quota(IFQ). When given to a vessel, Individual Vessel Quota (IVQ).
leasing	A temporary transfer of shares from one individual to another within a fishing year.
license limitation	Process whereby only a specific number of licenses are issued for participation in a fishery.
maximum allocation	The total amount of quota that can be allocated to an individual or vessel.

minimum allocation	The least amount of quota that can be allocated to an individual or vessel.
net economic benefit (or benefits)	A term describing public economic benefit. The benefits come from efficient use of the fish resource.
rent sharing	The share of profits paid to the government. It is viewed as a payment for use of the fish resource.
shares	An individual's percentage or allotment of the resource for harvesting.
total allowable catch (TAC)	The annual recommended catch for a species or species group. A regional Council sets TAC from the range of the allowable biological catch.
transferability	The sale or lease of quota from one qualified individual to another.
quota tracking	Quota must be monitored on an individual basis. The total quota can then be tracked.
windfall profit or gain	Fish are a resource that has value. An IQ program conveys a share of the resource to private use. People are able to sell or lease the shares. Original shareholders get this windfall. People who buy or lease do not get the windfall. Experts disagree on whether this is a real windfall to original shareholders. Some say it just the present value of the future profits a fisherman gives up when he sells to get out of the fishery.

ADDITIONAL INFORMATION

Fishery Management Councils with ITQ management

Mid-Atlantic Fishery Management Council
Federal Building
300 South New Street
Dover, DE 19901
302-674-2331

South Atlantic Fishery Management Council
Southpark Building
Suite 306
1 Southpark Circle
Charleston, SC 29407
803-571-4366

North Pacific Fishery Management Council
P. O. Box 103136
Anchorage, AK 99510
907-271-2809

National Marine Fisheries Service
Office of Fishery Operations
9721 Executive Center Drive North
St. Petersburg, FL 33702
813-893-3141

Sea Grant Advisory Programs in Coastal States. Contact your marine advisory agent.

