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ISSUES AND OPTIONS IN DESIGNING AND IMPLEMENTING LIMITED ACCESS PROGRAMS IN MARINE FISHERIES

Samuel G. Pooley
in collaboration with the
NMFS Limited Access Working Group

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center

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PREFACE

This report was prepared through a series of workshops held by the ad hoc NMFS Limited Access Working Group (LAWG) in the period 1994-97. Contemporaneously with the preparation of this report, NMFS leadership created an intra-agency board on limited access issues. The NMFS Limited Access Oversight Board will provide the agency with ongoing information and policy recommendations for the coordination of Federal limited access programs. The Board is dealing with a range of activities concerning limited access, including individual transferable quotas. The Board is not the same as the ad hoc Limited Access Working Group which initiated this report. This report, and the recommendations of the working group, were presented to the Board on January 16, 1998.

This report was also presented to the National Resources Council study of individual fishing quota programs currently underway (1997-98) although it was not designed specifically for that purpose.

ACKNOWLEDGMENTS

This report was compiled from contributions by individual members and work groups of the NMFS Limited Access Working Group. Substantial sections on Implementation were prepared by John Lepore and Jay Ginter, Alaska Region, NMFS, and on Enforcement by Steve Meyer, NMFS Enforcement, Alaska. Patricia Clay, anthropologist, Northeast Fisheries Science Center, made substantive contributions on socio-cultural aspects. Joe Terry of the Alaska Fisheries Science Center provided extensive reviews and contributions to a number of sections. Ray Clarke of the Pacific Islands Area Office and Marcia Hamilton of the University of Hawaii JIMAR program also provided extensive reviews. Judith Kendig of the Honolulu Laboratory provided editorial assistance. Sam Pooley, industry economist of the Honolulu Laboratory, served as compiler and editor.

The participants in any of the three workshops which generated this report are listed here. As usual, no individual is responsible for any particular interpretations or recommendations, and certainly all errors belong to the author.

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[1] R = NMFS regional office; C = NMFS science center; F/ = Headquarters offices (SF=Sustainable Fisheries, ST= Science & Technology); GC = NOAA General Counsel; EN = NMFS Enforcement; NE= Northeast; SE = Southeast; AK = Alaska; NW = Northwest; SW = Southwest; DOC = Department of Commerce; PSMFC = Pacific States Marine Fisheries Commission.

Participants were not representing their offices officially.

GLOSSARY OF ACRONYMS

The following acronyms are used in this report. The definitions are synoptic and not meant to illuminate all aspects of the terms.

CDQ *Community development quota,* similar to an ITQ program except that the quota is awarded to a fishing community

FMP *Fishery management plan,* plans prepared by the regional fishery management councils for implementation by the U.S. Secretary of Commerce under the Magnuson-Stevens Fishery Conservation and Management Act (1996)

IE *Individual effort* program, similar to an IQ program except on the input side, e.g., limiting the number of traps, days at sea, or trips a vessel can use

IFQ *Individual fisherman's quota*, a share of total allowable catch or harvest guideline that is allocated to participants with various conditions on transferability of the individual quota (e.g., ITQ)

IQ *Individual quota,* usually the same as an IFQ program but more generic in terminology

ITE *Individual transferable effort* programs, IE programs parallel to the ITQ variation of IQ programs

ITQ *Individual transferable quota,* IQ or IFQ programs with tradeable or marketable shares of total allowable catch

LAWG *Limited Access Working Group,* ad hoc NMFS intra-agency group which met to generate this report 1994-97

MSY *Maximum sustainable yield,* the largest catch which can be maintained on average over a number of years. Defined by the Magnuson-Stevens Act for U.S. management purposes.

OY *Optimum yield*, the socially appropriate catch (including allocation of that catch), subject to MSY constraints. Defined by the Magnuson-Stevens Act.

TAC *Total Allowable Catch,* amount of fish that can be harvested under specific regulations, usually in quota form

SECTION I. INTRODUCTION

A. Purpose of the Report

This report provides technical advice and recommendations to NMFS fishery managers and the regional fishery management councils on the development and implementation of *limited access* programs (which are discussed more fully in Section I.B.). Almost all Federally managed marine fisheries in the United States today are under some form of limited access, ranging from simple restricted permit programs and limited entry schemes to more detailed transferable quota and effort programs. This is a dramatic change from the 1980s, when only a handful of Federally managed marine fisheries had limited entry programs, and even from the mid-1990s when less than a majority had any form of limited access. Many of these systems, especially the simpler ones, are likely to evolve into more sophisticated (and potentially more complicated) systems. This evolution poses a challenge to the agency and the regional fishery management councils. This report identifies important principles which fishery managers might well consider in developing (or revising) limited access programs. The information in this report is advisory: it does not represent a formal set of requirements, procedures, and policies.

The report discusses the following issues:

- Basics of limited access
- Design and scoping considerations
- Limited access alternatives
- Nature of the fishing *right*
- Coordination and equity
- Implementation, *including eligibility, monitoring, & enforcement*
- Evaluation

The relationship of these issues is depicted in Figure 1.

This report does not provide a comprehensive treatment of each subject. Some basic issues are covered in detail, but many others are addressed simply as a sequence of points to consider in developing limited access programs.

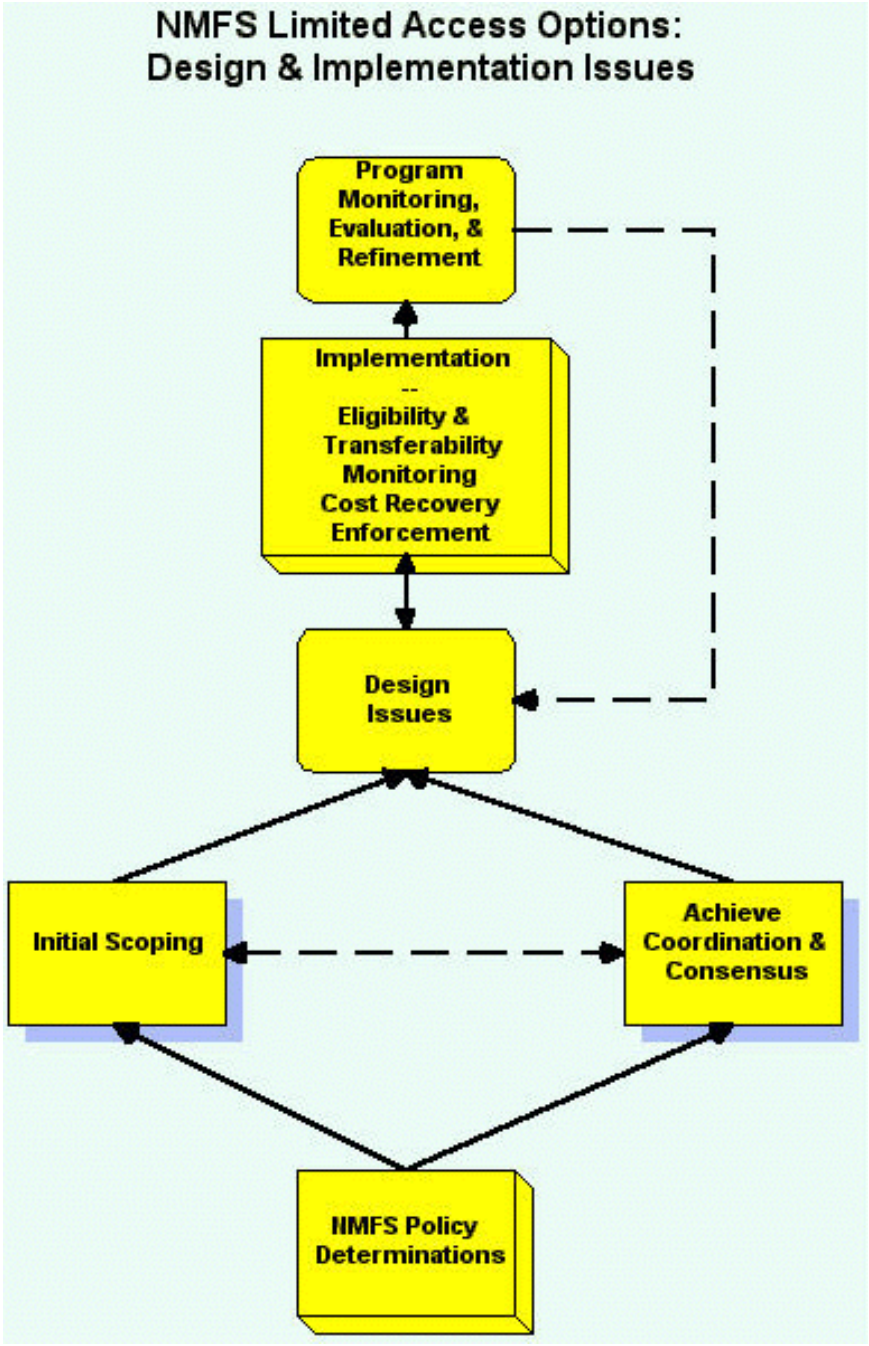

Figure 1.--Limited access design & implementation issues.

It is the product of an informally constituted intra-agency Limited Access Working Group (LAWG) comprised of NMFS fishery management specialists, scientists, enforcement agents, and NOAA attorneys.[2] Three NMFS workshops, held between November 1994 and March 1997, initiated a dialogue on critical issues facing the agency in terms of the design and implementation of limited access programs. The first workshop (Seattle, November 1994) consisted of presentations and papers on our experience in limited access programs and establishment of subgroups on key issues. The second workshop (La Jolla, May 1995) was an interactive planning session which identified over 80 critical issues which needed to be addressed in designing and implementing limited access programs. These issues are included in this report and listed in the appendix. The second workshop also initiated a series of topical subgroups which discussed key issues and prepared write-ups on these issues. The output from these subgroups was used to construct this report. The third workshop (St. Petersburg, March 1997) reviewed the draft report and made a number of substantive recommendations on further work on this issue within the agency.

Recommendations

As a part of writing this report, various recommendations for further analysis and decision-making were suggested by consensus of the Limited Access Working Group. These recommendations will be addressed by the NMFS Limited Access Oversight Board and their inclusion in this report does not represent agency policy.[3] In many ways the explicit recommendations are quite narrow in scope. The Limited Access Working Group recommends no particular type of limited access program nor any particular feature for most of them. There are some technical details that are preferable in the vast majority of cases, and these are highlighted. Throughout this report there are implicit recommendations on how best to proceed. These also do not necessarily represent agency policy, per se, but represent the attitude of practitioners in the field concerning limited access programs. In all cases, explicit agency policy and Federal rules and regulations have precedence.

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[2] The report includes material written by many people and reviewed and revised by many more. No contributing individual is responsible for any particular part.

[3] Nor is it expected that every individual in the Limited Access Working Group concurs with each recommendation.

I.B. What is *Limited Access*?

Limited access represents an evolving system of fishery management alternatives to the direct biological and operational controls which typify open access fisheries. This report was prepared in order to provide an orderly method for considering the design and implementation elements of limited access systems and their relative benefits and costs. Limited access has been addressed in a number of important theoretical papers starting with Gordon (1954) and Scott (1955) and reviewed in a number of recent papers (e.g., Scott, 1988; Townsend, 1990; and Waters, 1991). We begin here with a brief discussion.

> *Limited access* derives from the earlier term *limited entry* which referred to license limitation programs. *Limited entry* meant controlling the total number of fishing vessels, fishermen, or equipment in a fishery. (Rettig & Ginter, 1978)

The historical alternative to limited entry in marine fisheries, at least in the United States over the past 50 years, has been open access.[4] In an open access fishery, government managers restrict the fishing power of the fleet through gear and vessel constraints, time and area closures, and/or total catch quotas. Such management measures may produce substantial economic inefficiency and generate a range of unfortunate disincentives for conservation. The objective of limited entry has been to reduce the economic inefficiencies of direct biological and operational controls while constraining the overall fishing power which could be applied to the fishery. These inefficiencies came from the inhibiting effect of biological and operational controls on the ability of fishing vessel owners and captains to operate their vessels in an optimal manner (e.g., dictating obsolete gear configurations or fishing in suboptimal seasons and fishing patterns). While limited entry programs restricted growth in participation in fisheries, it was soon found that *capital stuffing* offset many of these gains, as the permitted fishermen increased investment in unregulated inputs (e.g., the horsepower of their vessel) in order to increase an individual fishing vessel's ability to catch fish. The result was that conservation objectives were not met, and additional measures were instituted.

Rettig and Ginter, who wrote one of the first comprehensive texts on limited entry, argued that:

> Limited entry may be instituted under the banner of conservation, but at the root of the issue is

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[4] Various co-management systems have also been in place, but usually within narrowly confined fisheries.

> the desire by fishermen [and potentially fishery managers on behalf of fishermen] for economic protection from dilution of their earnings that might be caused by either more fishermen or fewer fish than before. (Rettig and Ginter, 1978)

Fishermen and fishery regulators were also aware that limited entry might also "help protect fishermen from themselves," particularly by constraining additional growth within a smaller or restricted fleet, and that limited entry programs might also allow more efficient methods of fishing.

This led to the term *limited access* which refers to a number of related methods whose purpose is to provide a more rational economic framework for fisheries management. These included ITQs (individual transferable quotas) and similar measures based on limiting the quantity of inputs or outputs of individual fishing vessels. These measures should be contrasted to more typical biological and operational controls under open access programs which restricted the number and type of gear units fishing vessels could employ; e.g., fishing traps, or which established fleet-wide quotas which led to the inefficient "race for the fish" as each fisherman competed to get the largest share.

If fishing is viewed as a typical production process, then that process comprises three main elements: productive inputs (labor, capital, including the vessel itself but also the fishing equipment and electronics, and intermediate inputs such as fuel and bait); management and operations in production (including processing, marketing, and finance); and outputs (fishery products). Interestingly the fishery populations under open access are generally not a costed part of the production process and hence tend to be used excessively. This "free" resource also allows fishing vessel owners to employ excess capital in harvesting that resource. Limited access programs seek to increase economic efficiency in the use of productive inputs while meeting output limits (e.g., quota, total allowable catch, harvest guideline, etc.) for the fishery as a whole.

Limited access is a fisheries management process that involves explicit assignment of fishery rights to participants. These may be rights to use a certain number of inputs in the fishing process (e.g., limited entry which limits the number of participating fishing vessels). Or these may be output rights in which the right refers to the quantity of fish which can be taken by individual participants.

As a result, limited access systems produce "winners" and "losers" in the distribution of fishing rights.[5] In particular, current participants are more likely to receive a greater share of the benefits of the program (e.g., available fishing rights) than future participants, although this too can be accommodated by market mechanisms (e.g., user fees or auctioning the initial rights). And *opportunities* for fishermen outside the system (as well as movement out by fishermen inside the system) are frequently foreclosed.

A central development in newer limited access systems has been preference for transferable fishing rights (early systems often prohibited sale or transfer of fishing permits).

> Limited access can be seen as a way of dealing directly with the allocation and distribution of fishing rights through use of market mechanisms, similar to the manner that most other goods and services in society are distributed. (Rettig and Ginter, 1978)

The market mechanisms are now frequently central to limited access, as it has developed from early limited entry approaches, refer to the markets for transferable permits, quota, effort units, etc. As described in the next section, there are now many types of limited access programs which reflect the different characteristics of fisheries, the objectives of the fishery participants and the fishery managers, and the institutional setting and experiences of regulation in that fishery. These systems are continuing to evolve as fishermen and fishery managers try to balance improvements in fishing and regulatory efficiency with conservation. Yet limited access programs also attempt to serve a number of social objectives which are not easily codified under the economist's *efficiency* criterion.

The Magnuson-Stevens Act (1996) allows a limited access system to be established to:

> achieve optimum yield if, in developing such a system, the council and the Secretary take into account .... present participation in the fishery; historical fishing practices in, and dependence on, the fishery; the economics of the fishery; the capability of fishing vessels used in the fishery to engage in other fisheries; the cultural and social framework relevant to the

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[5] There are winners and losers in open access fisheries as well. Some fishermen argue this is the essential of fishing, the competition for the fish. But there is also competition in open access systems for influence over regulation and a substantial loser in such systems tends to be the public through inefficient harvesting and over-fishing.

fishery and any affected fishing communities; and any other relevant considerations. (16 USC 1851, Sec 303 (b)).

Not all marine fisheries need to contain limited access features, and the 1996 revisions incorporated in the Magnuson-Stevens Act specifically preclude new IFQ systems through the year 2000. (16 USC 1851, Sec 303 (d))

I.C. Scoping Process for Limited Access

There is nothing unique about the scoping process for limited access systems. The usual scoping, public meeting, and administrative process carried out by the regional fishery management councils and the agency in developing any FMP or FMP amendment applies equally to the development of limited access fisheries.[6] The National Standards under the Magnuson-Stevens Act (16 USC 1851, Sec 301) apply equally to limited access systems and to open access systems. National Standard #5 calls for "efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose." Efficiency is a major objective of many limited access systems as they attempt to replace the race to the fish with a more rational allocation system and at the same time meeting conservation objectives. National Standard #4 restrains any management measures from discriminating in favor of fishermen from a particular state in setting up limited access systems. This is important because limited access systems create a system of exclusive rights.

Limited access is not appropriate in all cases, although all marine fisheries could be managed with limited access as part of their management system. The general advantage of limited access is that it reduces the rate of investment in the fishery from what it might have been under forms of open access. Under the right conditions, this will increase productivity in the economy, as capital investment is diverted from fishing to more productive enterprise. However, under some circumstances, for example where there are many small-scale participants or where economies of scale appear to be limited, there may be few advantages (and in some systems substantial costs) in implementing a limited access system. Thus, a critical stage in scoping in consideration of a limited access program (or revision to an existing program, such as a simple limited entry program), is to:

Identify the specific problems in the individual fishery that limited access is intended to resolve, and

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[6] This process is outlined in Operational Guidelines--Fishery Management Plan Process (NMFS, 1995).

Determine whether limited access is appropriate for the particular fishery, i.e., what fishery management objectives it can meet.[7]

There is an interconnection between these initial scoping issues and an evaluation of which type of limited access program might be appropriate for a specific fishery. Important elements of different types of limited access programs are discussed in section II.A. The salient features of alternative limited access programs that would influence selection of a particular system include legal authorization, stock dynamics and externalities (e.g., bycatch and interactions with protected species), fishery interactions (between user groups and gear categories), socio-economic and operational features of the participants (including relationships to shoreside industry and communities, previous history of management, native rights, etc.). In particular, the ability to define the relevant participants or community and the ability to define and measure the limited access right (discussed more fully in section II.B) are significant features of this choice. Also significant are the relative implementation costs (including sources of fiscal resources), the relative effectiveness of alternative limited access programs, equity, and the complexity of implementation.

It is important to specify fishery-specific management objectives at the outset, and to recognize that there may be conflicts among the biological, economic, social, and operational objectives. This is the essence of determining Optimum Yield (OY); i.e., the yield from a fishery which will provide the greatest overall benefit to the Nation, prescribed on the basis of maximum sustainable yield as reduced by relevant economic, social, or ecological factors, and provides for rebuilding in the case of overfished fisheries. (Magnuson-Stevens Act 3: 28)

Because limited access programs are inherently allocational, understanding the social and economic characteristics of the fishery is central to the scoping process. This may also entail the agency and the regional fishery management councils working more closely with the existing participants in a fishery and with fishing communities in terms of providing basic information about the fishery management process, including the objectives of limited access programs in general, before any particular limited access program is recommended.

Indeed there may be conflicting motivations, including what economists term "rent-seeking", i.e., attempts by stakeholders to reserve to themselves the fruits of government action through their lobbying of government. Regulators may have their own

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[7] This includes developing clearly defined and if possible *measurable* objectives through which the program can be evaluated.

self-motivations to be involved in a particular system of fishery management (e.g., those with more scientific requirements). These motivations must be weighed as part of the benefits and costs algebra of the limited access decision. Thus, part of the initial scoping process would include having a good idea of who the stakeholders are likely to be under various limited access options and what the distributional consequences of these options might be.[8]

Determine early in the process the approximate number of vessels and fishermen who might qualify under different options.

However, if it appears that limited access is generally appropriate for a particular fishery, then the issue becomes:

Determine what kind of limited access program is most appropriate for this fishery?

In addition to the scoping issues identified earlier, a thorough analysis of limited entry alternatives to develop a sense of proportion or balance between the complexity and costs of the program and its anticipated benefits is needed.

The issue of the appropriate cost and complexity of regulations, whether limited access or not, is central to administrative procedures under the Magnuson-Stevens Act. The Regulatory Flexibility Act requires that fishery management measures are worth their cost and that they make a net positive contribution to the Nation. However, it is frequently a problem for the agency that the regional fishery management councils, in their pluralistic role of meeting the concerns of competing interests, develop fishery management proposals that are difficult and costly to implement, for both the agency and the fishermen. This can be particularly true in limited access programs where the criteria for initial issuance of rights can have a strong allocation, and hence equity, effect on the people involved in the fishery. Therefore, it is critical that in the earliest scoping stage the potential costs and complexity of the proposals be weighed.

Generally, the more complicated a limited access program, particularly in its administrative details, the higher the direct cost to the agency. For example, initial allocation requirements that are complex (e.g., involve interpretations of planned investment activity) or dependent on factual determinations (e.g., historic fishing activities) that are difficult to verify,

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[8] Politically it is generally not feasible to have too many losers in the initial distribution of fishing rights. As a result, many limited access programs have methods of "winnowing down" the number of active participants over time.

may create loopholes that jeopardize the legitimacy of the program and increase the likelihood of disputes regarding initial allocation of the harvest privilege. Such disputes (appeals of initial determinations) can be expensive and time-consuming for both the agency and the affected segments of the industry. Methods for cost recovery are discussed in Section III.C.

The matrix of salient characteristics of limited access programs introduced in Section II.A is a first step in this process. To the extent that a particular type of program is known to be costly to implement (e.g., ITQs), then it is incumbent on the regional fishery management council to demonstrate 1) why ITQs are important for meeting the biological, economic, and social objectives of their fishery and 2) how the known costs of implementation (e.g., monitoring catch in ITQ fisheries) can be reduced. And the agency may need to take a stronger role early in the scoping and design phase; if the costs of the program cannot be borne by the agency, then the regional fishery management council must identify sources of funding and ways to reduce implementation costs, or the type of limited access program should be changed to something less costly. (The issue of cost recovery is taken up later in Section III.C.) It is important to realize that apparently complex limited access systems do not necessarily need to be costly to implement: in some cases costs arise because of special considerations given for allocational reasons. Frequently the regional fishery management councils do not intend to develop costly and complex programs; they may evolve as various interests are expressed in the scoping and design phase. It is the responsibility of the agency to point out, and on occasion challenge, these complexities.

In particular, the agency needs to emphasize the relationship between eligibility criteria and restrictions on transferability of rights and the ability of the agency to fund and administer the program. Many restrictions that are placed on limited access programs, and most specifically on IQ programs, are attempts to prevent market mechanisms from having specific effects. Many are simply counterproductive in the long-run. While there may be good economic and social objectives for particular eligibility criteria, or for restricting the transfer of permits (e.g., CDQ programs), these restrictions frequently lead to losses in capital efficiency, excessive appeals costs, and inequitable costs to particular segments of the industry. In other words, it is not only the agency which bears the cost of complex limited access rules, the participants may as well.[9]

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[9] For example, in a moratorium program with non-transferable permits and vessel replacement severely restricted, there might be a substantial burden on those vessel owners who wished to exit the fishery but could not sell their vessels because of permit restrictions.

The agency should develop a schedule of estimated costs for different components of the monitoring and enforcement system that are particular to limited access systems which can be used as early estimates in the scoping and design phase.

The types of limited access programs introduced in the next section and the matrix of relationships between programs and critical implementation features which are recommended, does not obviate the need for a thorough scoping process and evaluation of what is needed for a particular fishery. The regional fishery management council's analysis and decision process at this stage is to explain specifically how limited access will help achieve the suite of conservation, economic, and social objectives for this fishery.

In the early stages in the design process it is important to resolve as many issues as possible of uncertainty among fishermen, fishery managers, and the public about the future prospects of the fishery. This will include not only good information about the scoping and design process, and information about limited access alternatives, but it will also involve providing good baseline information on the current and project status of the fishery (biological, socio-cultural, and economical), both under the limited access program and under alternatives (including the "no action" alternative or open access alternative).

Finally, this report provides substantial information on what should be considered in the development of a limited access program and to a certain extent, what particular types of limited access programs should contain. The agency has choices in terms of whether to codify the information from this report as formal recommendations and policies and whether to mandate that particular implementation features be included in specific limited access programs.[10] An advantage of leaving decisions on program specifics up to the regional fishery management councils is that the councils become more intimately involved in the design and implementation of the program. (Obviously it is critical that good communication occur between the council staff and agency staff.) Mandating the features of limited access programs reduces the discretion of the regional fishery management councils and may lead to alienation of the councils from the positive features of limited access programs. It may also lead to problems of over-designing a regional program based on national criteria.

On the other hand, there may be important implementation details where economies of scale in implementation and

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[10] Some of these policies may be an outgrowth of the National Academy of Sciences studies mandated by the Magnuson-Stevens Act of 1996.

consistency between fisheries and regions are critical. In these cases the agency will have to produce a mechanism for evaluating what is salient in these situations.

Define the Range and Scope of Limited Access Program

What fisheries would a particular limited access system affect; what species, gear groups, and localities would be included, and which excluded? Answers to these questions would define the scope or range of effect that a limited access system may have. To some extent, definition of the management problem(s) that will be addressed by the limited access system will define the scope of the program. Some unintended effects may result from the definition of scope, however. The most significant is the creation of open access holes in the fabric of an otherwise limited access fishery.

For example, five or six species of fish may be harvested typically with a certain type of fishing gear, say anchored longline gear. If the limited access system will include only two or three of these species, then management difficulties may be increased instead of decreased by the program. Fishermen who do not have limited access permits, but would otherwise have fished for the limited access species, will enter the open access fisheries. By so doing they will catch and potentially kill the limited access species as a bycatch, which they would be required to discard if they do not possess a limited access permit. A solution to excessive fishing effort in one or two fisheries may contribute to excessive bycatch in others. Many other examples can be imagined, but a corollary of limited access systems is that they may create short-term increased fishing effort in adjacent fisheries that remain open access. Ideally, the scope of a limited access system should include all fisheries in a distinct area that use the same type of fishing gear or vessel. This is not always possible for various political or jurisdictional reasons.

The overall scoping process is outlined in Figure 2.

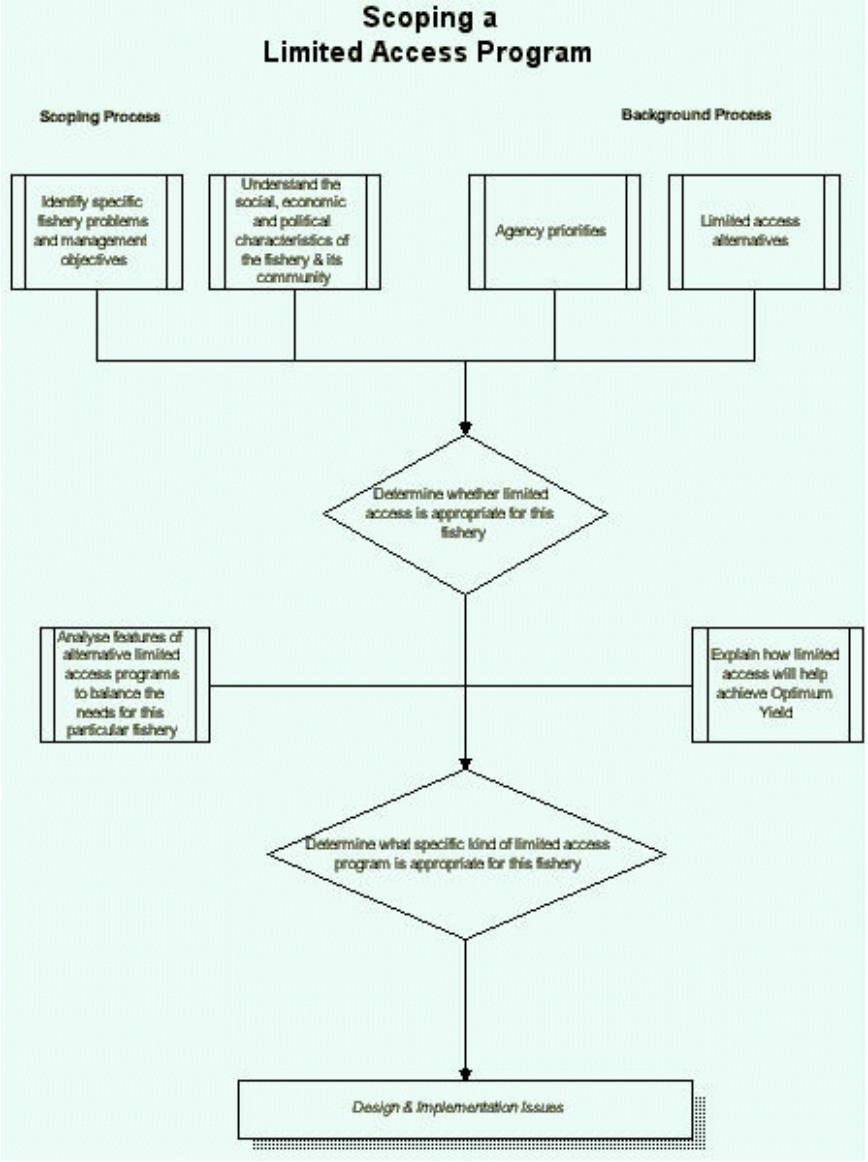

Figure 2.--Limited access scoping process.

SECTION II. DESIGNING A LIMITED ACCESS PROGRAM

A. Alternative Limited Access Programs

Limited Access can refer to a wide range of fishery management methods. In the United States, limited entry (either as moratoriums or license limitation) has been the predominant form of limiting access to Federally managed fisheries. More recently, ITQs have been instituted in some fisheries to rationalize the operations of a fishery within a specific quota (TAC) constraint.[11] However there is a range of potential methods for limiting access. The following outlines some key features of a number of alternative (and sometimes sequential or overlapping) limited access programs. Each represents the issuing of a fishing right in some form, specified here generically as a *permit*.[12]

Moratorium on new entry:

Moratorium on new entry is a simple, and usually preliminary, measure to restrict the growth of a fishery.

Permits are usually issued to most if not all recent and historical participants in the fishery, and no one is allowed to fish without a permit. Control dates are frequently implemented to warn future participants that subsequent or interim participation may not qualify them for long-term participation in a more developed limited access program.[13] The purpose of a license moratorium is to reduce (or eliminate) anticipated growth in harvesting capacity. As such, they tend to be transitional programs, as many limited entry programs tend to be.

Permits may or may not be transferable between owners (they frequently are not under a moratorium), although conditions may exist for transferring the permit from one vessel to another (e.g., replacement) without change of ownership. The latter generates the danger of increasing harvesting capacity, as vessels become larger, more efficient, more

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[11] See Squires (1995) for a recent sympathetic discussion of a whole range of design and implementation issues concerning ITQ programs.

[12] Who or what holds the permit is an issue which is addressed in Section II.B. For the purpose of discussion now, we assume that all effort (input) limitation systems involve vessel permits issued to the owners. Output limitation systems (e.g., ITQs) may not require vessel-specific permits but may restrict the use or transfer of the quota shares.

[13] Control dates are discussed in Section II.C.

technologically advanced, etc. This is typical of transferable permit limited entry systems. Moratoriums may also involve management authority reissuing retired permits through lotteries or other mechanisms. However, harvesting capacity often increases even when permits are not transferable between vessels.

License limitation with vessel reduction:

Limited entry with *attrition* is one form of this type of program. As in moratoriums and limited entry, permits are generally issued to vessel owners, frequently tied to particular fishing vessels. License limitation programs frequently contain explicit mechanisms for reducing the number of permitted vessels in the fleet. Fleet size reductions may be achieved at the time a license limitation program is initiated if qualifications for initial permits are sufficiently restrictive (i.e., not issued to all vessels which have recently participated in the fishery, e.g., grandfathered vessels). Marginal operations or recent entrants to the fishery are often excluded by requiring a significant catch history for the vessel or vessel owner over a period of years. Other criteria for inclusion may also be applied which will produce an initial number of permits less than the current fleet size.

Another method for reducing the number of active vessels is to allow (or require) the combination of two or more permits into one. This may be economically attractive if permits are issued by size-class or if harvest limits are set by permit or vessel size-class. (See also the discussion on fractional licensing.)

In most license limitation programs with vessel reduction, licenses cannot be transferred, either to different owners or to different vessels. (Exceptions are usually made for replacing vessels which sink.) The purpose of license limitation with vessel reduction is to reduce harvesting capacity through attrition as vessel owners retire, go into other fisheries, or leave fishing to pursue other activities or investments. Permit buy-back programs may also be used to reduce fleet size provided the agency retires the permits.

Limited entry (traditional):

Limited entry is also a restricted permit system which in this context provides greater flexibility than a moratorium or license limitation in that the fishery manager can develop a method either for 1) expanding the number of vessels operating in the fishery or 2) allowing for transfer of permits between owners. The former is quite rare in this era of over-fishing and excess fishing capacity. The latter

is common, but it has been the mechanism by which apparent *windfall* profits have been realized and harvesting capacity expanded. Limited entry programs have frequently contained 1) permit renewal conditions (e.g. use-it-or-lose-it) and 2) non-market mechanisms for reissuing expired, lapsed, or seized permits (e.g., lotteries).

Individual quotas:

Individual quota systems are output-oriented programs whose purpose is to reduce the race to the fish phenomenon of fleet quota system and to resolve problems of excess capacity. Permits (or *quota*) to catch a certain amount of target species (and in some cases non-target or bycatch) are typically issued to historical participants in the fishery (in some cases including processors and fishing communities).

IQ programs require the determination of 1) the total allowable catch and 2) the allocation of that quota to the individual permit holders. IQ programs also require accurate monitoring of individual vessel (permit holder) landings.

IQ programs may or may not have vessel restrictions, and they may or may not allow transfer of quota between permit holders.

Transferable quota systems (ITQs, etc.) allow for the sale (or lease, bequest, or gift) of quota from the original permit holder. These are considered the most economically efficient and provide considerable flexibility to permit holders. However, they are frequently viewed as having negative distributional effects, in the sense that they transfer a public good into a de facto private asset.

Non-transferable quota systems may lead to the total allowable catch not being taken or may lead to perverse incentives, including quota violations and fraud, if the quota holder cannot harvest the specified amount.

Transferable quota systems allow permit holders the choice whether to increase or decrease their quota holdings as fits their business plan during a particular fishing season. As a result, they have been viewed as the most efficient form of limited access management. (see Squires, 1995, for a thorough discussion.)

Finally, we assume that quota holders are also permit holders, but it is possible that the general permit to fish (e.g., issued to a vessel owner) may be separated from the availability of any quota shares which would authorize harvest. The relationship between permits and quota shares

may require careful specification, similar to issues pertaining to the definition of *owner* and similar legal boundaries.

Individual effort programs:

Individual effort (IE) programs are the mirror image of individual quota programs in that they restrict productive inputs rather than the productive output (i.e., quota). They attempt to match some form of standardized effort to the conservation objective, maximum sustainable yield, or optimum yield.

IE programs can limit the number of traps a vessel uses, the number of days at sea, or other variable features on the input side. The objective is to restrict fishing effort and indirectly restricting total catch while allowing individual fishing vessel operators to maximize their chance for acquiring a disproportionate share of the harvest.

IE programs are less precise management than IQ programs in that the relationship between fishing effort and catch is not typically known with precision. IE programs do require monitoring of individual vessel performance, but the monitoring is generally easier than IQ programs (particularly with the use of satellite-based Vessel Monitoring Systems). IE programs can be transferable or not, as with ITQ and IQ programs.

A variant on transferable IE programs is a *fractional licensing* program which would issue incomplete permits and then require participants to acquire additional fractions (shares) from other share holders to create a complete permit. A complete permit would be required to fish, while those with incomplete permits or who sold their fractions would choose not to fish. Fractional licensing can be a method of progressive effort reduction.

Community, processor, and other limited access systems:

In most cases, quota is issued initially to participating fishing vessel owners, thus conferring an advantage to the vessel owner rather than to others involved in the fishery (captains, processors, etc). However, instead of issuing limited access rights to vessel owners, permits (or quota) could be issued to relevant fishing communities, to fish processors, or to fishing captains and crews. ITQ and equivalent effort programs could allow transfer or sale of quota (licenses, permits, etc.) to any of these groups.

The best known of these alternative limited access systems is the *Community Development Quota* approach in which a share of the total allowable catch is allocated to particular

coastal communities. Conditions on transferability of this quota outside the community may or may not exist. (The CDQ programs in Alaska also involve development of *plans* for community use of the funds acquired through the sale or lease of the quota.)

Community programs might be structured in a number of ways. The Alaska programs have relied on the existing IFQ programs but subsequent programs might be implemented without strict quota approaches, or which might have more or less stringent community goals for the use of funds raised from sale or lease of quota or permits.

Defining the eligible community is also be a critical step in such a program.

Two additional possibilities which until recently have in general been considered outside the pale of limited access in the United States but which might also be considered are: development of tax-based approaches to allocational efficiency, and options for vessel or license buy-back. These options are not discussed in this report because of their fiscal implications, but they might be considered as the Federal government re-evaluates the appropriateness of various policy tools. Finally, various co-management approaches are discussed in the final part of this section.

Alternative types of limited access systems represent a range of choices to be faced by the regional fishery management councils, and to a certain extent, there may be a progression of programs, from simple license moratorium to transferable limited entry to some form of individual allocation system. With the many limited access features which must be considered in the fishery management scoping and design process, this report is designed to provide guidance concerning what are the critical features (both advantages and disadvantages) of alternative programs. It discusses the relationship of several key features which must be considered in designing, implementing, and evaluating a limited access system, but it does not provide an evaluation of each type of limited access system.

The Limited Access Working Group thought it would be useful if the agency and the regional fishery management councils could develop a matrix of salient characteristics of alternative limited access programs as an important technical contribution to the design of limited access programs. This matrix of the prominent features which would make systems succeed or fail would provide not only a process guideline to fishery managers but also concrete advice on the applicability of limited access options for particular fisheries. The matrix would array the different types of limited access program (in some detail) identified above with critical features concerning objectives, costs, and complexity. (Table 1 provides a schemata for such a matrix.)

Table 1.--Potential matrix of limited access programs and their salient characteristics.

Limited Access Program	Management Objectives			Cost & Complexity			
	Biological	Economic	Social	Initial issuance	Transfers	Monitoring	Enforcement
Moratorium							
License Limitation							
Limited Entry -- transferable permits							
Individual quotas (general)							
Individual transferable quotas							
Individual effort units -- non-transferable							
Individual effort units -- transferable							
Community quotas and permits							
Processor quotas							
Industry cooperatives							
Co-management							
Corporate management							

Co-management and Its Variants

Co-management is a dynamic concept of sharing management responsibility between government and the fisheries sector at the local level. As opposed to being a management measure such as a license limitation or ITQ program, it is an institutional arrangement for reaching management decisions concerning what management measures will be used and how they will be implemented and, perhaps, enforced. Therefore, co-management and ITQs, for example, can coexist and in fact, in some cases, ITQs and co-management have been found to strengthen each other. Co-management may assist in successfully implementing an ITQ program.

Co-management refers to a range of potential decision-making process which empower the participants in the fishery directly in terms of making both conservation and allocation decisions about the resource. These differ in-kind from the individual permit systems discussed above in that the authority under the IFQ systems still resides with the Secretary of Commerce. Community development quotas might be viewed as a type of co-management but here too, the community is determining how to distribute its share of predetermined quota, not the quota itself. In general co-management tends to posit a more formal management role for the industry and other fishery participants, as well as the surrounding community in both the conservation and allocation decisions. Industry cooperatives, private corporations, and non-profit foundations which would take over many of the management duties of the government fishery manager should also be considered under the co-management approach.[14]

The central purpose of co-management is not to limit access or catch per se but to involve the fishing industry and community in the management process. However, by establishing a management "community", co-management inherently limits access to the resource by those outside the defined community.

To the extent that co-management evolves "naturally" from transferable quota or effort systems, then there is no apparent challenge to the existing fishery management system. (However, to the extent that quota is centralized in a cooperative operating authority, there may be conflict with anti-aggregation restrictions on the amount of quota any individual or corporation can hold.)

It would be useful to determine to what extent alternative management systems which share or delegate the authority of the Federal government are feasible under current legislation (and

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[14] See Scott, 1993 for a discussion on *self-governance* and Townsend and Pooley, 1995 for a discussion on *distributed governance.*

decide whether to seek legislative relief if necessary and desirable). This would include determining the degree of co-management that is possible and desirable and the extent to which NMFS or Councils can initiate independent management organizations, such as cooperatives or corporations.[15]

These approaches have been considered outside the current fisheries management paradigm but are consistent with a variety of public policy initiatives for increasing the degree of local and stakeholder involvement in governmental activities. The recent agreement by factory trawler owners in the Pacific whiting fishery to allocate fixed shares of their overall allocation is another example of this kind of transition in management decision-making.

II.B. Nature of the *Right*

A limited access program confers a conditional or restricted *right* (or *privilege*) to fish.[16] The nature of that right is both a broad legal issue (who owns the resource, what privileges does this right represent?) and a specific issue for implementation.

The 1996 revision of the Magnuson-Stevens Act includes the following qualifications concerning fishing *rights*:

> An individual fishing quota or other limited access system authorization--
> (A) shall be considered a permit for the purposes of Sections 307, 308, and 309 [concerning prohibited acts and enforcement];
>
> (B) may be revoked or limited at any time in accordance with this Act;
>
> (C) shall not confer any right of compensation to the holder of such individual fishing quota or other such limited access system authorization if it is revoked or limited; and
>
> (D) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested.

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[15] There are substantial questions concerning the sharing of responsibilities between the Federal government and private or semi-private entities involved in co-management alternatives which would need to be resolved for establishing such mechanisms under the Magnuson-Stevens Act (1996).

[16] See Edwards, 1994 for a discussion of property rights in fisheries.

(Magnuson-Stevens Act, Section 303 (d).

This section deals with the implementation issue and considers the nature of the limited access *right* in a slightly broader context than the Magnuson-Stevens Act's 1996 revision. Of course, the qualifications of the Act take precedence.

The choice of limited access program alternative, whether an input-based program like license limitation or an output-based program like an ITQ or some form of co-management, determines the general nature of the right to be specified in the design of the program.

The nature of the limited access right needs to be specified clearly, specifically, and as simply as possible.

For example:

> *the permit holder (or her/his designee) may catch __% of the total allowable catch of ___ species (as measured in ____ units) during the open season using the fishing vessel ____ [name] and obeying all other applicable fishing regulations.*

However, even as simple a designation as this raises several questions, including *form*, *duration*, *alienability*, and *revocation* in the specification of the right. In addition, issues pertaining to *liability* and *liens* are also posed. *This discussion uses the term permit but it refers equivalently to other forms of the limited access right (e.g.,* quota share*).*

Form: There is good reason to confer limited access rights as permits which are already well defined as an administrative procedure and which trigger an existing array of enforcement alternatives (15 CFR 904–permit sanctions, hearings, etc.). Permits are increasingly issued to *persons* (e.g., individuals, partnerships, corporations, industry or community organizations, including local governments), unencumbered by particular features, as opposed to being issued to *fishing vessels* or being issued contingent on use with a particular fishing vessel. The *divisibility* of the right is also an issue. Quota programs may be in large blocks, or in individual pounds or tons. Individual effort programs may be similarly structured. Smaller fundamental units enhance transferability and hence economic efficiency. (Fractional license programs are a form of divisibility in permit systems.)

The locus of the *right* (individuals, partnerships, corporations, organizations, or vessels) needs to be determined.

Duration: limited access rights might be issued for a restricted period of time or might be viewed as indefinite.

Neither limited entry permits nor IQs necessarily imply exclusive use of the resource, either immediately (e.g., it could also be used by another gear group under a different fishery regulatory regime) or in perpetuity. However, unanticipated termination of limited access privileges can have disruptive effect on the fishery and create widespread feelings of unfairness among the participants and others involved in the fishery (e.g., processors, wholesalers, suppliers). It can also cause economic losses to be incurred in the market for permits or quota shares, or in the markets for other fishery resource rights because of the appearance of an unstable planning horizon. This would reduce the economic efficiency that is a major objective of many limited access programs.

Provisions for termination may need to be included in each limited access program.

Each limited access plan needs to define the nature of such provisions (whether they should include prerequisite conditions for termination, definition of what constitutes sufficient advance notice, guidelines for phasing out limited access programs, provision for compensation, etc.). An important related issue is the assurance of due process in any decisions leading to termination.

As a general rule, rights in perpetuity hinder management flexibility (they raise the question considered elsewhere of how to terminate a limited access program), but they facilitate the development of markets for rights and increase the economic efficiency of the limited access program. In general, limited access rights have been indefinite in duration, contingent upon things like resource sustainability and future management decisions. Keeping the options open has the advantage of encouraging the positive aspects of rights in perpetuity without explicitly committing the government to such a course. One method for achieving such flexibility would be to grant fishing rights of a specified duration, with contractual bases for renewal (e.g., performance standards). Nonetheless, the general view of the working group was that:

Rights should be issued with an indeterminate time-horizon, and yet ultimately be revocable by the agency.

Alienability: limited entry programs initially conferred a non-transferable right to participate in a fishery. If property rights are to be of economic value, then owners of the rights must be able to exclude others from using their asset (their resource use right). Excludability is fundamental to resource rights (Schlager and Ostrom, 1992). Similarly, economic efficiency arguments favor unencumbered transferability, but equity and administrative considerations may suggest restrictions on the transfer of the right. ITQ programs were designed to

allow broad transfer, sale, and lease of quota shares.[17] But Alaska's CDQ (community development quota) program restricts ownership of quota to particular fishing communities (codified as eligible communities). The use of that quota can be leased out by the community subject to State and Federal approval of the leasing arrangement. There is no a priori determination possible on this issue, except to point out that

The greater the number of restrictions on permit (and quota) transfer, the greater the administrative burden or the less efficient the program.

A critical legal issue in permit systems has been the problem of involuntary alienation: divorce, death, bankruptcy, or non-agency governmental forfeiture (e.g., IRS). In non-transferable systems, specification of the ability of the surviving members of a family to continue use of a permit, or of a permit holder to designate someone else within the family to use the permit (e.g., due to infirmity of the permit holder), has led to some very complicated regulations, as well as to compliance problems. These problems are reduced in transferable permit systems, but case law has yet to determine the exact extent to which limited access rights may be involuntarily transferred. The agency (and the regional fishery management councils) must clearly state any conditions (as well as anticipated legal positions) concerning alienability at the outset of the limited access program. If the permit has a transfer value, involuntary alienation may occur under legislation that is beyond the Magnuson-Steven Act (e.g., the Internal Revenue Act).

Revocation: Given the general nature of a limited access right, that it confers a privilege to utilize a public resource rather than direct ownership of that resource, limited access rights will be revocable by the agency. This provides the agency with flexibility in revising a limited access program (e.g., changing from a license limitation system to an ITQ system) and it affords enforcement with a significant asset to ensure compliance.

Limited access rights are revocable.

The most recent revision to U.S. fishery conservation law (Magnuson-Stevens Act (1996)) clearly specifies that limited access rights are to be revocable (16 USC 1851, Sec. 303 (d)). However, to the extent that stakeholders have a reasonable investment-backed expectation of holding the share, *takings* claims can be anticipated in cases of revocation of a permit. There is probably not a great likelihood of success of such

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[17] In practice, a number of IFQ programs have substantial restrictions on transferability.

claims, but it is incumbent upon the agency (and the regional fishery management councils) to clearly specify the revocable nature of these permits.

Having conferred limited access rights, the agency and the regional fishery management councils must also take into account the potential responsibilities they will have in managing the fishery which in turn affects the value of these rights.

Liability: Liability arises with particular force under the more "complex" limited access programs because of the asset component of the right, i.e., that the fishing right may have been purchased for a substantial cost. The investment-backed expectation of an income stream from that asset represents a different contractual relationship between fishery participants and fishery managers. Actions which restrict the return on that investment, including alienation of the right, may be viewed as actionable in a liability sense. There are two types of liability to be considered in the development and implementation of a limited access program: agency (and regional fishery management council) liability and external liability.

In the case of agency liability, the administrative procedures which typify the regional fishery management council rule-making process should provide adequate relief. This is particularly true as long as the right is considered the conferring of a specified privilege, rather than an ownership stake. [To the extent that an ownership stake is conferred under some innovative limited access programs, then these issues would have to be revisited.]

In the case of external liability, this represents a private claim between the permit holder and the source of the damage. The agency would not be involved in litigation concerning damage which resulted in a diminution of the value of the permit, although in the case of damage to a fishery resource, the agency might file an independent claim based on its role as resource steward.

Liens: an important issue that can affect the alienability of permits is the agency's responsibility to record liens against limited access permits. Liens, which are encumbrances attached to permits on behalf of lending institutions, enforcement agencies, and other creditors, can impact the ability of permit holders to transfer their permits.

The ability to record liens on permits is beneficial to permit holders (and prospective permit holders), as well as creditors. Allowing liens to be recorded provides increased security to lending institutions, thereby increasing the collateral value of the permit. The Magnuson-Stevens Act directs the Secretary of Commerce to establish an exclusive central

registry system for limited access permits. This registry system, which may be administered on a regional basis, shall:

- provide a mechanism for filing notice of a nonjudicial foreclosure or enforcement of a judgement;
- provide for public access to the information filed under the registry system; and
- provide such notice and other requirements of applicable law that the Secretary of Commerce deems necessary for an effective registry system.

Lien status priority shall be determined in order of filing (i.e., the first lien filed will have highest priority). This lien registry shall constitute the *exclusive* means of perfect title to, and security interests in, limited access permits, *except* for Federal tax liens, which shall be perfected exclusively in accordance with the Internal Revenue Code.

II.C. Eligibility

The *nature of the limited access right* provides the basic structure for determining who is eligible under the program and what criteria will be used for issuing initial permits. Measurable aspects of eligibility for a limited access permit can be broadly divided into *participation* and *dependence*.

Eligibility criteria: Eligibility criteria reflect the decisions of the regional fishery management council, as validated by the agency, on what is fair, appropriate, and practical in terms of determining which classes of participants will be issued limited access rights and which may be excluded from the fishery. Essentially this is a design phase issue, but it is most concretely faced when the agency considers how the criteria will be applied. So it is incumbent upon the agency to investigate these implementation issues during the design phase, as the regional fishery management council is going about its scoping and decision process. It is, after all, the agency which finally approves the limited access plan and which must implement it. This is also the appropriate time for assisting (or indeed requiring) the regional fishery management council in resolving issues of participation in ways that fit the existing participants' and the affected fishing community's sense of appropriate or normative behavior.

Eligibility criteria need to be measurable (unless an auction-based approach is taken or the criteria are to be determined independently by a co-management approach). Measurable aspects of participation for qualification would be determined by the nature of the limited access right and might include the following for primary producers (there may be

different criteria for processors and other stakeholders). Each would need to be both measurable as well as verifiable.

Participation:

- years active in the fishery
  vessel ownership, permit holding, vessel captaining, crewing
- permit history
  (years holding a particular type of permit)
- catch history
  (target and associated species)

Dependence:

- extent of capital investment
  (vessel value, vessel size, plant size, value)
- reliance on a specific fishery
  (percentage of income or ex-vessel revenue)

A related issue is that the time (duration) and timing (specific periods) fishermen have participated in the fishery are usually important in determining limited access qualification. This frequently becomes a contentious issue in terms of equity and dependence and must be faced directly in the design phase since it sets up a number of implementation issues, including appeals. Two critical concerns which arise early in the process are when participation in the fishery stops qualifying and what level of landings--if any--is required for qualification. As a result, an important legal issue for the agency in defining the management group and in the measurement of allocations is to clearly specify the criteria for these decisions and to report clearly any changes to these criteria as framing the program takes place.

Control dates: Control dates are legal notices that a fishery manager (the regional fishery management councils in the U.S.) is strongly considering a limited access system for a particular fishery. The purpose is to avoid a rush of fishermen requesting permits or trying to establish fishing history in the interim between a council's initial discussion of limited access and its actual implementation. Control dates should be provided to the public through an advance notice of proposed rule-making (ANPR). The ANPR announcing the control date should be very general, simply stating that a limited access system is being considered for a particular fishery and that anyone entering the fishery after the specified date is not assured that she/he will be given access consideration if a limited access system is adopted. Further, the ANPR should inform the public of the importance of participating in the consideration and development

of the limited access system. But control date *notices* do not establish limited access systems and are not binding on the regional fishery management councils or the Secretary of Commerce.

In cases where vessel permits have not been required, creating a licensing program at this stage would not only assist in identifying the participants, but it would also be a means for tracking participation in the fishery.

Once a control date has been announced by a ANPR, consideration and development of a limited access system should proceed quickly. Inaction or lengthy delay may render the use of an "old" control date indefensible. There are no definite criteria for determining whether a control date is too old, such determinations will depend on circumstances of each case. For example, a more complicated limited access system, such as one that would require quota allocation, may require more time for design and implementation than a simpler limited access system, such as a moratorium on entry. A longer time from control date to implementation may be justifiable in a more *complex* system[18] that takes more time to develop and implement an equitable system. The period of time between the end of eligibility and the beginning of fishing under a limited access program should be minimized.

Of similar importance in the eligibility and initial allocation process is the availability of evidence for determining qualification, such as the years for which State, Federal, or processor records are available. (Issues related to Appeals are frequently related to the availability of information, and so should be considered during the design phase of the limited access program.) The availability of data for making these kinds of determinations is discussed in Section III.

Finally, where quantitative allocations are to be made (e.g., ITQs), equity requires the agency to consider the dependence of the fisherman, household, and community on that resource. This applies in terms of initial eligibility and the extent of the rights to utilize those resources (nature of the right).

Eligibility criteria: When designing a limited access system that requires the evaluation of multiple factors for eligibility, regional fishery management councils should be advised to develop matrixes that assist in determining the weight of various criteria. Many limited access systems use past and present participation in, and dependence on, a fishery to

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[18] The term "complex" is relative within limited access. These systems may nonetheless be simpler than the traditional biological and operational control fishery regulations.

determine eligibility. The formulas developed to determine eligibility must be clearly defined and transparent (i.e., public) by the entity designing the limited access program so that potential applicants are aware of the factors that are considered more significant when determining eligibility. For example, the amount of participation (expressed in pounds landed) may be the most important factor in some limited access programs (quota based). Other programs, for example the State of Alaska Limited Entry Program for Salmon, used a point scheme that weighed past participation as well as economic dependence on the fishery (to varying degrees) to determine whether a person qualified for a limited access permit.

Such eligibility criteria tend to be highly political. Participants in the fishery management process frequently can anticipate who, or at least what group, will be *in* and *out* under various criteria. The more elaborate the criteria, and point system, the more likely that problems will occur in its implementation (leading to appeals, etc.).

II.D. Transferability of Permits

The transferability of permits is an important consideration when designing a limited access system. For some limited access systems (e.g., individual transferable quotas), the transferability aspect is such an integral part of the system that it appears in the name. A permit transfer can be either permanent or temporary (leasing). Some reasons for allowing the transferability of permits are that transferability is a method to:

- rationalize the fishery by allowing market forces to find the highest and best use for the harvest privilege;
- avoid closed groups of participants by allowing new entrants into the fishery; and,
- address emergency circumstances by allowing initial issues to transfer their harvest privileges if they can no longer fish.

Permit transferability may not be necessary or desired for all limited access systems. Some reasons for constraining or prohibiting transferability are:

- A method to reduce the number of participants over time through attrition;
- A method for maintaining social control over participation (through the reissuance procedure);

- A method for avoiding windfall gains (or the appearance of windfall gains) to permit holders from the reallocation of a public asset to private holdings.

Transferability may be administratively costly (e.g., through tracking transfers), but so may reissuance of expired, lapsed, or seized permits.

The number of participants in a fishery can also be reduced over time by issuing transferable permits to some persons and non-transferable to others. For example, a point system that accounts for several factors of eligibility could be used to determine who should receive transferable permits. Eligible applicants above a certain point level would receive transferable permits, and those below that point level would receive non-transferable permits.

When designing a transfer system, the designers must

Decide whether limits should be placed on who may be the recipient of harvest privileges through transfer.

This issue has an important connection to one of the reasons to allow transfers referenced earlier, that is, to control the future characteristics of the fleet. For example, the IFQ program for Pacific halibut and sablefish in the Alaska Region requires that persons receiving a permit by transfer must be either a person who received an initial allocation of quota share or an individual with at least 150 days experience working as part of a harvesting crew in any U.S. commercial fishery. This requirement is designed to limit IFQ holders to bona fide fishermen.

II.E. Cooperation and Consensus

Limited access systems require a large degree of consultation, consensus building, and cooperation among Federal and State management agencies, representatives of the affected fishery, participants in the fishery, and Federal and State enforcement offices in order to be successful. Although the overall design of a limited access system clearly stems from its purpose, a primary determining factor in the design of any limited access system will be the ability to implement it across jurisdictional boundaries. Several issues concerning cooperation in implementing the planned limited access system should be resolved early in the planning process.

Consensus on the advisability of limited access: The first task is to find general agreement on the management problem which limited access, or some other management tool, is intended to fix. Without a general agreement that biological, economic, or social problems exist that are amenable to solution with a

limited access system, then such a management system is not likely to succeed. Most affected persons, in government or in the industry being governed, should perceive a need for limited access if such a system is to achieve the desired results. But first the fishing industry and managers should agree on the desired objectives of fishery management. This is often the first obstacle in designing a limited access system due to differing perceptions of the problem and appropriate management solutions to the problem.

Managers may perceive that the problem is too much fishing effort from a fishery mortality perspective as well as from a management philosophy point of view. For example, over-capacity in the harvesting sector may lead to overly risk-averse management decisions due to an agency's inability to respond quickly enough to changes in fishing pressure. Too much fishing effort may mean unnecessarily short seasons, increased risk of exceeding catch limits, excessive bycatch, inefficient gear limitations, etc.

To some fishermen, however, a short season may be good if it allows them to use their vessels in a variety of other fisheries in which there is a sequence of seasons. If the fisherman is a crew member, a race for fish that breeds short seasons may be good also because it increases demand from vessel owners for crew labor. From these fishers's perspectives, the problem may be too many other fishermen, especially those that compete using a more efficient gear type, usurp the fishing grounds, come from distant communities, or depress the price of the fishery's product.

The fish buyer or processor may have a third perspective such as a desire to use their capital investment and labor as efficiently and continuously as possible while keeping their costs as low as possible. Some forms of limited access, such as ITQ systems, might be opposed by processors as they tend to increase costs in handling and processing by reducing the volume of fish being landed at particular points in time (e.g., spreading the season throughout the year) and increasing the prices they need to offer to fishermen.

Politicians, State governors, and State and Federal legislators have yet other perspectives. They are likely to focus on employment opportunities in the fisheries under their purview and want to preserve the bucolic image that the general public seems to have of the fishing industry. Large, industrially efficient fishing operations do not fit this image and tend to arouse public suspicions about the use of its resources. Hence, if a limited access system suggests consolidation of harvesting privileges, or other fundamental changes, politicians will likely oppose it and seek a system that has a less radical effect (even though biological control program (e.g., large area-closures) may have similar, if less apparent, effects).

Finding even a narrow common ground on limited access among all of these perspectives may be difficult, but necessary, otherwise time and energy may be better spent exploring alternative management tools. A limited access system that is implemented without common agreement on the management problems that it is supposed to resolve will likely suffer from higher compliance and enforcement costs than necessary. Finding a common understanding of problems in a particular fishery may involve public hearings, meetings with fishing industry representatives, focus groups, and town hall meetings in coastal communities. Eventually, a grassroots understanding of problems and issues should emerge that will indicate whether limited access should be attempted.

Communications: Using common and easily understood terms is necessary for clear communication with all participants throughout the development of a limited access system, from the first meetings to define the problem through the drafting of implementing regulations. Personnel assigned to conduct hearings and meetings with the fishing industry should be alert to misperceptions that may arise due to regional differences in the meaning of certain terms or deviations from technical legal terms. For example, in developing an IFQ system in Alaska, one policy maker suggested that fishermen who had bare boat charters should qualify for an initial allocation. Subsequently, however, that term was found to have a narrower meaning than the policy maker intended, and the term was dropped in favor of the broader term, vessel lease. Confusion may also arise concerning the common names of species, fishing gears, or fishing grounds. A limited access system designed to manage a fishery for a particular species with specific gear may inadvertently create an open access loophole for a similar or the same species caught with the same gear but with a locally different name.

The best antidote to language or communication problems is to provide abundant opportunities for public comment as planning progresses. One technique is to use an ad hoc committee of representatives from a cross section of the affected public to clarify common terms and traditional practices in the fisheries. Regional fishery management councils do not serve this purpose well because their members tend to be more concerned about advancing the positions of their respective constituencies than with the sometimes extensive details that need clarification.

In many ways, the creation of limited access programs is a paradigmatic example of Robert Edwards' (1981) recommendation that an *architect* is required in the fishery management process, a person who communicates between the fishermen, the scientists, and the fishery managers and who develops the outlines of a

program which are conducive to each interest.[19] This requires a whole suite of communications activities, from informal educational sessions and focus groups to mailings and media announcements to formal public meetings and appearances before constituents. This helps foster understanding and cooperation with all parties, identifies problems earlier in the design stage, and ultimately assists the buy in for program implementation.

This requires not only additional agency workload up front, it also requires that people in the agency operate in some new ways (which may require clearance from an administrative procedures perspective). In particular, it is usually essential to work with the defined management community in both the scoping and design phases.[20]

- **State-Federal and inter-regional cooperation**

Coordination is also required on two other dimensions in the design phase which should improve the program in both design and implementation: State-Federal and inter-regional dimensions. While there has always been a need for consistency between State and Federal fisheries regulations, limited access systems place increased needs on government agencies. This consistency ranges from defining the scope of the limited entry program itself to ensuring that the limited entry program is consistent with regulations for other fisheries (e.g., the problem of bycatch). The following section discusses some of these concerns.

Cooperation between agencies: Cooperation and coordination between State and Federal agencies in implementing a limited access system is critical to the success of the system. A limited access system in Federally managed waters, for example, could be undermined by a significant open access fishery for the same species in waters of the adjacent State (similar problems may occur in fisheries which operate both within and outside of the EEZ). The fishing effort that would have entered the Federally managed fishery were it not for the limited access system will instead enter the open access State waters fishery. This creates congestion and overcapacity in that fishery. If compatible State and Federal limited access regulations cannot be implemented together, then other alternatives might need to be explored. One alternative might be to delegate a Federally approved limited access system to the State (subject to Magnuson-

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[19] In anthropology, this sort of person is known as a *cultural broker* whose role is to mediate among different groups by virtue of familiarity with each of them.

[20] Outreach and education will also be required when ready to actually implement the limited access program. This point is raised later in this report.

Stevens Act restrictions on discrimination against residents of different states). In this case, the State government would have a strong hand in creating the limited access policy and would be more interested in its implementation. One attractive feature of this alternative is that it would extend State permitting authority into Federal waters. A disadvantage, however, may be that any changes to the limited access plan or its implementing regulations would have to be approved by a Federal management agency and be consistent with all Federal laws. It assumes both cooperation between the Federal government and the state(s), as well as among affected states. A variation of this alternative might be to have a Federally approved fishery management plan in which the state(s) exercised day-to-day management of the fishery in both State and Federal waters. In the latter case, limited access permits would be issued by the Federal agency or jointly with the state(s).

In some jurisdictions, cooperation and coordination with Native American Tribal Governments may be indicated. Sovereign rights which may be viewed as extending to the authority to manage fish and game populations that occur on, or near, their tribal lands and waters must be considered in developing limited access systems. Fishery manager should consult with the groups before proceeding with a limited access scheme that might affect the tribes and their members.

Other areas of State/Federal cooperation and coordination that are important include enforcement, catch or landing reports, and biological and socio-economic survey work. The objective of this State-Federal coordination is to design an equitable and efficient limited access program which avoids inconsistencies in the defined management communities between jurisdictions.

Region-species-gear coordination: A similar coordination issue arises with defining the management community across regions, species, and gears. The limited access scoping process must determine 1) the responsible management units and how these will be administered; and 2) which species and gear types within a multispecies or multi-gear fishery will be included in the management unit (and how). These are very basic design parameters without which anything only single-species, single-gear, single-area programs can proceed. To the extent that fishery managers and constituents who cross area-species-gear lines can be involved early in the scoping and design process, the more likely that efficiencies in implementation will be realized and challenges based on conflicting jurisdictions will be minimized.

Finally, and although it should be obvious, limited access programs are not a replacement for existing fishery regulations and agency priorities nor are they independent of these regulations and priorities. Thus it is critical in the design stage to weigh the development of new limited access programs

against existing regulatory programs and agency priorities. The limited access program must be consistent with the existing regulatory approach, or it must explicitly supersede that approach. It is also critical that the agency be able to provide the personnel and fiscal resources necessary to develop and implement the limited access program in a timely and effective manner. (Timeliness may be even more critical in limited access programs when control dates have been set or where historical participation is a part of initial eligibility.)

Problems with bycatch in inter-related fisheries: The creation of limited access systems will almost assure that closely related fisheries not otherwise restricted will experience an increase in fishing effort. Fishing effort deprived of the limited access fishery by reason of the new cost of entry, will likely go into these closely related fisheries instead. Closely related fisheries may be those in which the same fishing gear is used, harvesting is conducted about the same time, or fishing occurs in the same general locations as the limited access fishery. The likely flow of fishing effort among such fisheries must be well understood before implementing a limited access system in one of them.

An ITQ fishery for one species that takes a bycatch of another species not managed under the ITQ program could cause excessive fishing mortality of the bycatch species. Conversely, fishing for one species not managed under an ITQ program may take a bycatch of another species that is managed under an ITQ program. A variety of alternative solutions may work to resolve or at least ameliorate the bycatch problem. First, estimates should be made of how big a problem it is, and whether bycatches are likely to increase or decrease under the contemplated limited access program. One alternative, in the case of a non-ITQ species being the bycatch species, is to allow for a larger amount of the bycatch species to be retained than would otherwise be allowed without the limited access program. This could be accounted for in setting overall harvest quotas for that species. Fishermen would be encouraged to retain and land the bycatch species along with the ITQ species. If a large price difference exists between the ITQ species and the bycatch species, however, this approach is not likely to be successful as fishermen discard the lower valued bycatch species to provide more room for the higher valued ITQ species.[21] Alternatively, fishermen using ITQs may be required to retain the bycatch species. This requirement may be difficult to enforce at sea, however, unless fishermen were actually observed discarding the bycatch species. The best

[21] It is worth noting that IFQ programs may also reduce "the race to the fish" which may be a cause of bycatch. To the extent that more rational fishing practices are possible, e.g., through more search and selection processes, IFQs reduce the opportunity costs of moving to reduce bycatch.

solution is to include all species caught with the same gear under the same ITQ program.

A particular problem may arise in the relationship of individual quota (IQ or ITQ) programs because of multispecies inter-dependencies. Part of this represents an effort to understand the operational and social inter-dependencies within and between fisheries. But with the establishment of a harvest right through ITQ programs, and hence a marketable asset, issues will take on an extra financial complexion. Bycatch, or of closure of ITQ fisheries because of reaching non-ITQ species quotas, and restrictions on high-grading and targeting in multispecies fisheries will all be viewed, at least in part, from the perspective of the investment in the fishing share. "Premature" closure of an ITQ fishery because of these negative externalities may lead to significant loss in ITQ shares, disruption of ITQ share markets, and loss of cohesion for the program. Similarly, these problems might also lead to increased under-reporting of catch and a host of related compliance issues.

A major purpose of limited access programs is to increase the net economic value of both the limited access fishery and inter-related fisheries, while meeting conservation (and habitat) objectives. Care must be taken that ITQ (and other limited access programs) be designed to avoid perverse incentives and to avoid the need for extremely costly monitoring and compliance programs, costs which might overwhelm the social benefit of limiting access in the first place.

Existing agency priorities: The planning, development and implementation of a limited access system may be very expensive, depending on the unique characteristics of the fishery under consideration. Existing management programs may be working to protect the biological health of the fish stocks, albeit without some desirable economic benefits. In this event, managers should carefully weigh the potential economic gains from a limited access system against the additional administrative costs of its implementation. Except for very small fisheries, the development and implementation costs of even an apparently simple moratorium could be significant when juxtaposed against other agency priorities. The complexity of some limited access systems, like some biological and operational control systems, may consume large amounts of the agency's staff time and budget even in just the detailed development of the proposal.

Integration with existing management programs: Existing or traditional biological and operational control fishery management systems usually have an administrative and scientific infrastructure associated with them. A limited access system may require significant alteration of that infrastructure as the nature of the fishery changes. For example, certain data may be routinely collected from a fishery for stock assessment purposes. A limited access system may cause additional work in implementing

and maintaining the new system, and thus reducing time available for other tasks.

Further, the limited access system, once implemented, may begin to bias the data as fishermen change their behavior in response to fishing under limited access. An example of the latter situation is the annual sablefish survey off Alaska. During open access management of the sablefish longline fishery, the biological survey was relatively unaffected by the fishery which lasted only a few weeks. Under an IFQ program, however, the longline fishing season for sablefish was greatly expanded, and biologists conducting the survey began to be concerned that commercial fishing at a research survey station just before sampling could be biasing survey results. Disruption of existing research programs by a limited access system should be minimized if their results are needed under the limited access system.

II.F. Equity and Dependence: Social Impacts

Because limited access programs are explicitly allocative, resolving issues of equity and dependence is critical to their successful planning and implementation. For fishermen, both equity and dependence are tied to concerns over maintaining their way of life, and as such can be highly emotional issues in addition to critical financial ones. While all fishery management measures have allocative aspects (and it can be argued that many *simple* biological controls have even more perverse equity effects than can occur under limited access), the procedure for and basis of the initial decisions on eligibility and issuance of permits (shares, individual quota, etc.) will be critical to the social acceptance and therefore to the economic viability of the entire limited access program.

This can be summed up as the general orienting principle:

Resolve issues of equity and dependence in limited access programs.

To do this, national standards and regional and community views should be considered. The Magnuson-Stevens Act addresses equity in its discussion of allocation under National Standard 4:

> (4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. (16 USC 1851, Sec. 301:98-623)

National Standard 8 of the Magnuson-Stevens Act addresses dependence:

> (8) Conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and the rebuilding of overfished stock), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities. (16 USC 1851, Sec. 301:104-297)

These Standards prohibit discrimination against fishermen from different States but not necessarily against particular groups of fishermen (e.g., community residents, gear types, methods of processing). It is important to sustain the participation of fishing communities (which may or may not correspond to individual towns or ports) and to limit adverse economic impacts on these communities, to the extent practicable and within the constraints of other national standards and other applicable law. NMFS has created general guidelines to assist policy makers nationwide in fulfilling these Standards. However, the beliefs held by fishermen of what is equitable and what constitutes dependence on a particular fishery resource may well vary from group to group and community to community. Thus, each proposed limited access program must take into account the affected fishing communities' sense of normative and appropriate procedures and beliefs, in addition to the broad guidelines offered in the Magnuson-Stevens Act.

Some common, and sometimes contradictory, views of fishermen as individuals and as groups that will need to be addressed in developing a limited access program include:

- "Real" fishermen (variously defined) deserve special preference.
- Anyone should be able to acquire a right to fish, but especially if they have a family history of fishing.
- Not just vessel owners but crew members and non-owner captains deserve initial shares.
- Those who "raped the resource" by taking large catches should not be rewarded with large quota shares.
- Those who can show the greatest level of dependence based on largest historic landings deserve the lion's share of the quota.

- Limited access inevitably results in consolidation, which inevitably favors big business at the expense of owner-operators.

Some critical actions identified by the Limited Access Working Group in developing a limited access program are:

- Explain how limited access is expected to help achieve optimum yield (MSY as reduced by any relevant social, economic, or ecological considerations).

- Determine the degree of community dependence on the fishery in question.

- Evaluate the expected social and economic impacts of the limited access program on fishing fleets, processors, and fishing communities (particularly if "rationalization" and consolidation are expected). This will include direct impacts for those dependent on the fishery being placed under limited access, and indirect impacts to fishing community members involved in related fisheries.

In determining the expected impacts of a limited access program, it is critical to identify the baseline as what will happen in the absence of the limited access program which may be quite different than a baseline in terms of the fishery in the last few years. Keeping the fishery as it is or was may not be possible with or without a limited access program. That is, be realistic about what the real options are.

- Determine the expected economic impacts of the limited access program on consumers.

- Evaluate the effect on qualification of the fact that for many fisheries in many years, vessel specific data are not available for undertonnage vessels.

- Determine the likely effect of the existing ownership structure of the fishery (e.g., degree of vertical integration, relative levels of corporate versus individual ownership) on potential trends in consolidation and compare this to community norms on "excessive" shares. Then evaluate whether or not specific rules are desirable or warranted to limit consolidation.

- Evaluate the likely effect of any minimum catch requirements on smaller vessels which traditionally have fished part-time in a variety of fisheries rather than full-time in any one fishery.

In general, issues of equity and dependence should be addressed in the Fishery Impact Statement (FIS), the Human Environment Chapter of the Environmental Impact Statement (EIS), the Regulatory Impact Review (RIR), and the Social Impact Assessment (SIA) which accompany regulations establishing the limited access system. The FIS and Human Environment Chapter provide background and context for the fishery. The RIR provides a basic benefit-cost assessment of the proposed system, and identifies the likely economic impact of components of the system. The SIA evaluates the social and cultural consequences that are likely to follow from a proposed system, including impacts on the way "people live, work, play, relate to one another, organize to meet their needs and in general cope as members of society."[22] Additional background social and economic data should be available in SAFE reports (see guidelines for National Standard 2).

Both RIRs and SIAs attempt to evaluate not only the proposed course of action but also reasonable alternatives (including the *no action* or *status quo* alternative). Identifying the social and economic groups, including fishing communities, which are likely to be affected and their levels of dependence is a key stage in identifying potential equity effects. The evaluation of the potential impacts on these groups then helps determine whether the proposed limited access program would have unequal impacts on stakeholders or negative efficiency effects. In some cases, it will be sufficient to identify these impacts so that decision makers can make an explicit weighing of the positive and negative impacts of the limited access program on the resource and the various stakeholders. Where certain negative impacts are determined to be unavoidable, mitigation measures may be recommended. The public policy problem is ensuring that the proposed system is consistent with the objectives of the Magnuson-Stevens Act, the Fishery Management Plan, the national standards, and other applicable law and still provide a pragmatic approach for allocating fishing privileges amongst fishermen.

Finally, once expected impacts have been determined, monitoring and evaluation are critical components in the continuous improvement of understanding of the actual effects of particular limited access programs in particular social, economic, and ecological contexts. These aspects are considered later in this report.

Section III. IMPLEMENTING A LIMITED ACCESS PROGRAM

A. Implementation Plan

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[22] Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, "Guidelines and Principles of Social Impact Assessment." 1993.

Once the general framework of a limited access program for a particular fishery has been designed, then the question of how the specific features of that program are to be implemented can be addressed. Critical features are:

- the nature of the right to be assigned
- the initial allocation process, including the eligibility criteria to be employed, how the rights are to be issued, and what appeals processes will be allowed
- how rights will be transferred and what kind of recording system will be utilized (if any)
- the costs of administering and implementing the limited access program and how these costs will be recovered
- compliance in the limited access fishery and how enforcement resources will be applied to the program
- monitoring fishing operations, whether from the capacity, effort, or catch perspective
- the nature of the markets for quota and other transferable fishing rights

These points are addressed in the subsequent parts of this section.

Of particular importance in creating new limited access programs is the need to maintain simplicity in the number and complexity of regulations. Although this is always true (and includes the statutory requirements to reduce the burden of Federal regulations), in the case of limited access programs there are two additional reasons for meeting this standard. First, because limited access programs are still relatively new, fishermen and other participants and affected parties do not have accumulated knowledge about what is appropriate or inappropriate under this kind of program. To enhance compliance with the regulations, they should be as simple and straight forward as possible, while meeting the needs of the program. To the extent that the design phase has a balanced choice between complexity and simplicity, the fishery managers should choose simplicity. Second, a substantial reason for going to limited access programs is to reduce the regulatory burden on fishermen and to make the fishing process more efficient. Complex limited access regulations do not contribute to that objective.

In keeping with these objectives, there is also a need to research and anticipate legal issues in initial issuance, transfer, and enforcement of the limited access program. A number of these issues are raised in the subsequent parts of this section. How this is to be accomplished will take the

cooperation of the NOAA General Consul's office, both nationally and regionally.

In addition, it would be extremely useful if the appropriate fishery managers developed an *Implementation Plan* to guide the actual steps, timing, and costs of announcing the program, issuing initial permits, developing an appeals process, setting up a monitoring system, and initiating enforcement. This plan should be developed in concert with the various Federal offices involved in administering and enforcing the limited access plan (including the regional fishery management councils), as well as those in the industry and fishery community affected by the limited access program.

This latter point emphasizes the importance of prioritizing education and *front-end loading* of information on program specifics to various groups affected by the program. To the extent that the relevant Federal agencies and offices can collaborate with the regional fishery management councils and organizations of the fishing industry and the affected community, the limited access program will be implemented more smoothly, at less cost to the fishermen, and with a greater chance of meeting its conservation, economic, and social objectives.

III.B. Initial Issuance and Appeals

The actual implementation of a limited access program, from license limitation to individual transferable quotas, involves a number of administrative steps. Many of these are similar to the administrative procedures already handled by the agency. However, some have peculiarities which need to be identified. Experience within the agency in implementing limited access programs can be generalized from one region to another as a means of capturing the knowledge which already exists. The overall process is outlined in Figure 3.

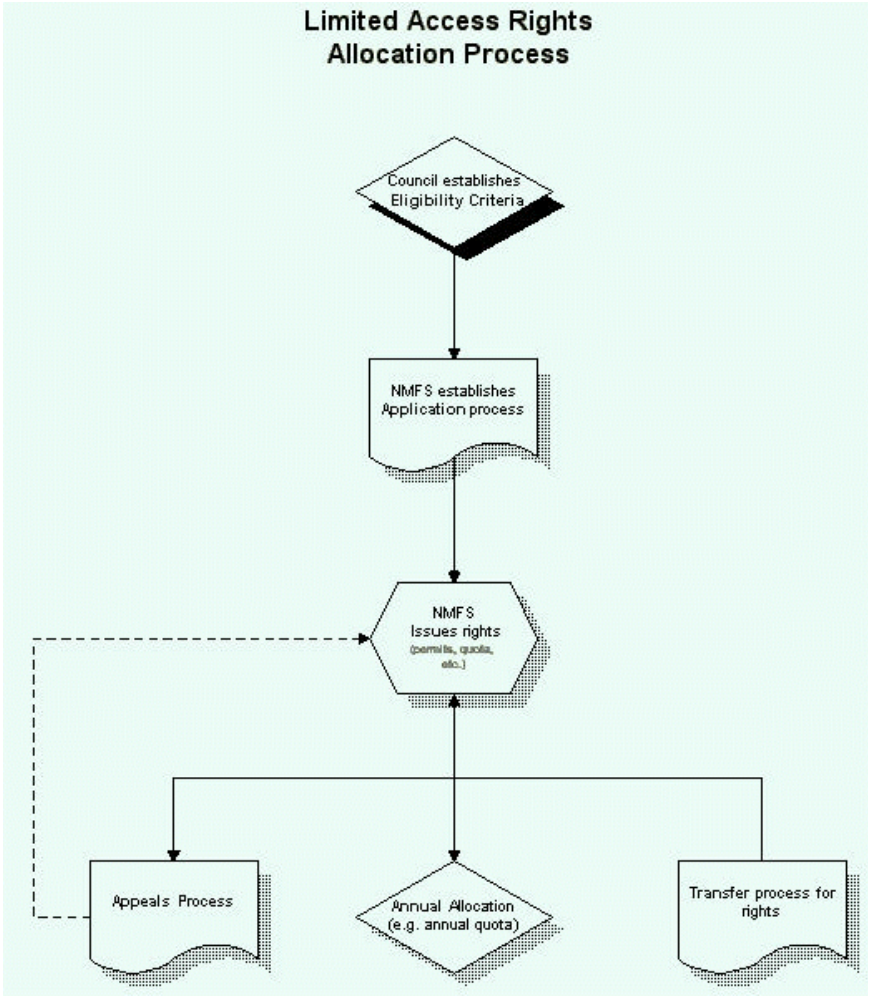

Figure 3.--Limited access rights allocation process.

- **Application and Initial Issuance Process**

Most of this stage of the implementation process fits within the administrative procedures that the agency already conducts for various permit fisheries, limited access or not. However, since permits are limited, and their issuance relies on various criteria (see the eligibility discussion in Section II), it is important for the agency to define standards of evidence in applying for permits (or other limited access units, such as quota shares). It will also be important to sort out issues of ownership in the initial issuance and use of the permit (e.g., in cases where there were multiple owners of a qualifying fishing vessels) and determining whether and how to utilize *interim* permits (permits issued pending appeals). Finally, if the government is going to reserve permits or quota to itself for research purposes, or for indigenous fishing groups, then a process for identifying and utilizing these permits must also be developed.

Issues of timing in the issuance, and use, of permits may also arise. The longer the time period in which permit application is allowed, the less certainty there is about the eventual number of participants and the potential effect of the limited access system. At the same time, applicants need sufficient time to document their qualifications, so this is a balancing function. Similarly, for example, if there are use-it-or-lose-it clauses, then permits may need to be issued beginning with the subsequent calendar year.

Other administrative issues in the initial issuance of permits can be expected to arise. To the extent that the agency can have a consistent administrative procedure throughout the Nation, confusion is likely to be lessened. At the same time, however, local peculiarities and norms of administrative process need to be recognized in applying limited access programs.

- **Appeals Process**

Consideration should be given to including an appeals process in limited access programs for several reasons. First, an appeals process can be used to remedy errors in decisions regarding eligibility and, in ITQ programs, allocations. This provides an opportunity to reevaluate decisions that may place the agency in jeopardy of legal action. Second, an appeals process can be used to resolve conflicts and claims not specifically provided for in the limited access program. Not all circumstances can be successfully anticipated by a program designer. The ability to evaluate claims outside the established procedure only facilitates the resolution of such claims. Third, an appeals process contributes to fairness and equity in management programs, an important factor in maintaining agency credibility with the public. In many situations, merely listening to an aggrieved party's position provides some

satisfaction in the process, even if the final resolution is not in the aggrieved party's favor. Providing an appeals process in these circumstances dispels the belief that a person is summarily denied by and has no recourse within the agency.

An appeals process can save the agency time and resources by reducing the number of cases appealed to Federal courts. Also, an appeals process can increase the agency's success in judicial appeals because judges often give deference to matters within an agency's expertise. The added protection afforded a person through an appeals process may provide the necessary information to convince a Federal court judge that denial was not arbitrary and capricious, but a reasoned agency decision based on the facts and circumstances. All the benefits of an appeals process, however, must be carefully weighed against the increased costs of such a process before including it in a limited access system. These costs include additional personnel to administer an appeals process and increased time during the implementation stage of a limited access program while appeals are being resolved.

As with most other components of a limited access system, a decision must be made whether there should be uniform national standards for appeals processes, or whether appeals processes should be specifically designed to meet programmatic needs. A third alternative, which combines the two main concerns above, would be to establish national guidelines for appeals processes that would ensure that certain aspects, such as due process rights and standards of evidence, are adequately addressed; but with sufficient flexibility so that appeals processes can be tailored to meet specific programmatic needs.

An example of a specific programmatic need is a hardship provision. A hardship provision may be included in a limited access program to accommodate persons who, beyond their control, were unable to meet certain criteria of eligibility. Through an appeals process persons claiming that a hardship prevented them from meeting certain criteria of eligibility would provide evidence to support that claim. However, including a hardship provision is a matter of policy and not always necessary. For instance, the IFQ program for Pacific halibut and sablefish in the Alaska Region did not include a hardship provision because of a three-year qualification period, a period determined by the agency to be long enough to allow a person to qualify for the program even if there were circumstances preventing participation for one or two seasons. A hardship provision might be applicable for programs with a short qualification period. Like limited access programs in general, consideration should be given to whether national guidelines should be developed for hardship provisions.

Confidentiality: An important issue in appeals, which also applies to the initial issuance of permits, is the problem of access to confidential data. Resolving accessibility to

confidential information is an important step in the permit issuance and appeals process. In some approaches to allocating limited access rights (e.g., ITQs based on historical landings), the credit for landings may have accrued to someone other than the individual associated with the landings record. Such formulas may lead to confidentiality problems in acquiring the records to establish qualification. Data which are relied upon in determining an individual's initial allocation (or qualification) must be available for review by the individual in the event of appeal.

There appear to be four options:

1. Formulate a national regulation allowing for access to confidential data (including State data as discussed next) in order to implement limited access systems. Such access might be restricted to an attorney or other representative, rather than to the individual appellant.

2. Develop State-Federal data sharing agreements (instead of relying on national regulation which would tend to create poor relationships between State and Federal agencies).

3. Utilize qualification and allocation formulas which do not require the use of confidential data (or at least do not allow the use of confidential data not "owned" by the applicant).

4. Do not rely on data to make initial allocations.

Whenever fisheries data are used in public decision-making (the issue of public accountability is addressed in the section on appeals), confidentiality of these data is an important concern. The Federal government relies on fishermen to file their catch and landings reports accurately, even though enforcement actions may be used to supplement that reliance. The fisheries science centers also rely on the willingness of fishermen to reveal information which might be beyond that required by catch or landings forms. Maintaining data confidentiality thus remains a central issue for the implementation of limited access systems (as for all management systems).

III.C. Costs and Rent Collection

There are two issues to be differentiated here, and they are discussed sequentially: cost recovery and rent collection. *Cost recovery* refers to the agency charging a user fee to cover the administrative, monitoring, and enforcement costs particular to a management regime. *Rent collection* refers to obtaining the fair

market value for the public as a whole from the private use of national resources.

- **Cost recovery**

  The costs particular to monitoring and enforcing limited access programs should also be recoverable by the agency from the participants in the fishery.

The agency has a long history of collecting and compiling information for scientific purposes, as well as for aggregate fisheries statistics. Similarly, the agency is experienced with enforcement of traditional open access (biological and operational control) regulations. Individual allocation systems have substantially greater monitoring and enforcement needs (as discussed in the subsequent sections on Enforcement and Monitoring).

At present, NMFS has the authority to assess fees to recover the costs of issuing permits and other administrative costs.

> The Secretary shall by regulation establish the level of any fees which are authorized to be charged ... The level of fees charged under this subsection shall not exceed the administrative costs incurred in issuing the permits. (Sec 304(d), Magnuson-Stevens, 1996)

This provision was extended under the 1996 amendments to include a wider variety of costs for ITQ and CDQ programs.

> The Secretary is authorized and shall collect a fee to recover the actual costs directly related to the management and enforcement of any--(i) individual fishing quota program; and (ii) community development quota program that allocates a percentage of the total allowable catch of a fishery to such a program.
>
> Such fee shall not exceed 3 percent of the ex-vessel value of fish harvested under any such program .... (Sec 304(d), Magnuson-Stevens, 1996)

Monitoring, enforcement, and scientific research costs are usually excluded from this definition of administrative costs. Yet limited access programs represent the conferring of privileges to the participants. They offer the opportunity for industry rationalization, the reduction of industry costs, and increases in the value of the catch. Limited access programs also may meet many economic and social objectives that may not be central to biological conservation. It is legitimate to offset the incremental costs, if any, of monitoring, enforcing, and providing enhanced scientific information for limited access programs through some form of cost recovery or rent collection.

(One side benefit of increasing cost recovery would be to share the costs of implementation in limited access programs with the recipients of the limited access right: this might lead the regional fishery management councils to design less complex and less costly programs.) At the same time, it is inappropriate for the agency to pile on costs to be recovered. This may be a difficult balancing act in the negotiations between the regional fishery management councils and the agency in the scoping and design phases of limited access programs, but it is critical in this period of constrained Federal budgets. Otherwise, in the development of limited access programs, and in particular individual allocation systems, the agency will be forced to identify new sources of funding for these additional implementation, permit recording, monitoring and data management, and enforcement responsibilities.

Finally, there is a particular question of internalizing the costs of stock assessments particular to individual harvest allocation systems. Stock assessment in a limited access fishery may be a case where the line between the agency's mission in conserving natural resources, which might be considered a normal governmental function, might also represent a particular value to the rights-holders.

- **Rent Collection**

Two potential and frequently anticipated effects of a limited access system are the provision of an apparent windfall profit (i.e., the ability to sell a permit for which they did not have to pay) to the initial permit holders and the increase in operating efficiency to those continuing to participate in the fishery. Anyone receiving permits (including quota shares) without explicit payment receives an increase in tangible wealth. The increased value of this wealth due to the efficiencies of the limited access program is often seen as the source of windfall profits.

There are two proposed objectives for collecting *rent*[23] from a limited access fishery: to reduce or eliminate windfall profits and to recover for the nation the fair market value for private use of the natural resource. However the Magnuson-Stevens Act

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[23] *Rent* is an economic term referring to the payment for use of a productive natural resource. Its most obvious application is in land rent, but it also applies to other natural resources, including minerals and fisheries. Most fisheries, however, are rent-free in the sense that the fishermen do not have to make an explicit payment for use of the fishery resource. As a result, fisheries tend to be over-utilized. The usefulness of *rent* as a practical matter has, however, been challenged because of difficulties in measurement (Pearce, 1991).

explicitly prohibits the collection of rent (as S304 (d) has been interpreted).

It is recognized that rent collection amounts to a tax on limited access system participants, or at best a user fee, and in either terminology represents a significant policy question. It also raises the political question, can the Magnuson-Stevens Act be modified to allow rent collection and once it had such authority, should it be utilized? However these matters are beyond the scope of this report.

III.D. Enforcement

Limited access programs, especially those that confer an individual or collective marketable right, involve a different set of compliance incentives than do traditional fisheries management systems (including simple limited entry schemes). As a result, there are likely to be new monitoring and enforcement challenges in the development and implementation of these programs.

Complex limited access systems raise a whole range of issues which have been implicit in existing fishery management policy.

Some of these issues may be identifiable with particular types of limited access programs, while some may be more generic monitoring and enforcement issues. This section discusses compliance issues that are particularly important in complex limited access programs. In addition, it lists some generic issues which need to be considered for a specific fishery's limited access management program.

Compliance, with its legal obligations, is a crucial element in the success of any fishery management program, and this remains true for limited access programs. The degree of compliance by those included in the limited access program, and those excluded, will depend on several factors. These range from the intensity of enforcement to the attitudes of the individuals, groups, and communities with a stake in the program. Lying within this range is understanding and acceptance of the limited access program. Complex limited access programs are relatively new, or have had mixed records of implementation and a plethora of rumors about their success.

Front-end loading and education of both participating and excluded fishermen, processors, buyers and communities about the purpose of the limited access program, its particular features, and the compliance measures which can be expected is critical to the success of the program.

Effective enforcement is fundamental to well-functioning property rights, including rights which limit another individual's access to a fishery through programs such as license limitation, and various individual quota and effort programs (IQ and IE). These programs increasingly confer some degree of property rights on the participants. However, in almost all of these cases, limited access programs entail rights to harvest the resource rather than ownership rights to the resource itself. The resource remains a *public* resource. As a result, limited access program participants do not face full personal or corporate incentives to invest in the future resource stock by deferring short-term harvests through full compliance with all elements of a fishery management program.

Determining *the nature of the right* is a critical step in the overall design and implementation of a limited access program.

Still, a logical argument can be made that limited access programs do provide some incentives and social structures which lead to increased voluntary compliance or self-policing within the industry.

First, limited access fisheries have a distinct set of rights which are frequently viewed as more personal than the somewhat diffuse rights which exist in regulated open access fisheries. Therefore, the extent to which fishing rights can be penalized or forfeited may be a major issue in the development of a limited access program. This may require establishment of permit or quota sanctions as part of the initial regulations.

Because a fishing permit is potentially a marketable commodity under a limited access system, its value to enforcement increases dramatically.

Second, it has been suggested that property rights holders under limited access programs will take on important fishery management responsibilities, including enforcement. This argument has included the idea of increased voluntary compliance, intra-industry self-enforcement, as well as industry financing of research and monitoring activities. For example, some segments of the fishing industry in Australia directly finance enforcement.

The argument has been that under IQs and other complex limited access programs it is in the best interests of individual operators to protect the resource from excessive depletion which could eventually lower the long-term value of their share of the resource. These programs can be designed to contain features which encourage enforcement measures internal to the industry, rather than relying on external government enforcement. Nonetheless, several factors may mitigate the expected increase

in resource stewardship, particularly in individual quota and effort systems.

First, because the IQ is a harvest right rather than a right to the resource stock itself, it is an incomplete property right. There remain open-access incentives that diminish the hoped for level of resource stewardship. Harvest taken by a particular quota holder marks not against that individual's interest in the overall resource but against the collective interest in the sustainability of the resource, of which the individual harvest (or over-harvest) is just a portion.

Second, increased voluntary compliance and resource stewardship may require a clear threat that noncompliance will bring swift and sure enforcement action. To the extent that the government is removed (either legally or operationally) from enforcement, this action may be delayed.

Third, different incentives to violate total allowable catch exists in open access fisheries where the fishing season is closed for the industry as a whole when the TAC is reached, rather than for individual vessels under IQ programs. When the fleet quota is reached under a standard TAC system, fishing beyond the quota is more noticeable. In contrast, under an IQ program, where an individual operator's quota share may be less than it was under open access (due to the initial allocation of quota shares), incentives may exist for some harvesters to "bust quota" (harvest above their allocated share) to reach their historical catch levels.

Important enforcement implications derive from the original allocation of rights, especially quota rights.

The argument for self-compliance (or intra-industry compliance) depends at least in part on the ability of participants to observe the behavior of others and on the incentives to report illegal behavior, rather than relying on rigorous formal enforcement. For instance, in a fishery based in a small community where members can observe each other's behavior, fishermen are expected to behave more honestly because violations can be widely observed and enforcement is internal to the community. Social pressure or the reputation of the individual may carry greater weight within such a society. Hence mutually beneficial outcomes such as compliance can be sustained by social norms. But even under these ideal conditions, the close social cohesion of these communities may lead to degradation of compliance (what might be termed "perverse" norms), particularly if the fishery is not fully encompassed by the community or if there are other dysfunctional forces at work between the community and wider governmental bodies. However, these same broad forces may also promote self-enforcement among very large, and hence prominent and observable, harvesting or

processing companies, who also have the largest potential losses if caught in a violation.

Whether compliance is assured by governmental monitoring and enforcement or through some form of industry involvement,

Monitoring participation is essential to the integrity of any limited access program.

This will probably involve both at-sea patrols and dockside[24] monitoring and inventory systems.[25] Monitoring catch (and effort) in IQ (and IE) programs is similarly essential. Under ITQ programs, acquiring the necessary quota to validate additional catch is costly. This creates an incentive to under-count catch or to sell catch under the counter.

Hail systems are sometimes used to provide an additional method of cross-checking vessel activity and landings. An IQ program might require fishermen to report out before fishing and to report in prior to landing, advising officials when and where they will be landing, the estimated weight of fish on-board, and the location of the sale. This feature adds cost and complexity to both fishing operations and enforcement activity. Balancing these monitoring costs with their benefits in terms of increased compliance, protection of the fishery, and salience of the limited access program is critical to the enforcement effort.

Balancing the costs of monitoring and enforcement with the anticipated benefits from an improved fishery management system is critical to the design of the program.

Because of the marketable aspect of ITQ and ITE programs, fraudulent business practices become subject to enforcement investigations: these span the entire range of the limited access programs, from initial applications for permits and quota to transfers of quota, as well as the documentation of fishing activity, processing, and commerce. The investigatory process is almost exclusively after the fact rather than during the actual process of the violation itself. The complexity of the management system will affect enforcement and compliance costs. Some but not all noncompliance represents theft and as such weakens the effectiveness of the property rights the limited access program was designed to establish. Therefore compliance

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[24] In the case of at-sea processing, dockside may involve the deck of the processing or transshipment vessel.

[25] This would include methods for monitoring vessel movement to and from the fishing grounds, and between ports, especially for restricted effort programs.

with these elements of the system may have a higher priority, particularly early in the program.

Increased white-collar enforcement capabilities will be required under complex limited access programs.

Many overlapping jurisdictional units and agencies complicate enforcement and monitoring, as well as the tractability of collective programs. This occurred with the lobster IQ programs in Australia, where each State ran an IQ program with insufficient cross-checking of catch between states. Australia also has an overlap between state and national jurisdiction, which adversely affected the southeast trawl IQ program.

Ensuring that limited access programs are consistent with and coordinated across jurisdictional boundaries is important to their success.

Finally, a particular problem may occur for IQ and IE programs when fishing takes place over a wide area and harvest is landed in many ports. Observability of every fisher's behavior is difficult, and more formal means of enforcement become necessary.

Limiting the number of authorized landing sites enhances enforcement and lowers its costs. Long coastlines with many small ports complicate enforcement and monitoring. Hence IQ programs may tend to limit the number of ports of landing or designated buyers. The structure of the industry may already limit the number of buyers, and hence increase the efficiency of monitoring. Government regulation of ports and buyers may prove to be both anti-competitive and inequitable in terms of the distribution of benefits from off-loading and processing. In the Alaska halibut and sablefish IFQ program, the number of established landing sites was maintained through an automated landings reporting system. The retention of the status quo in terms of landing and off-loading sites preserved competition in the ex-vessel markets, increased the buy-in of participating processors and communities, and precluded legal challenges from historically active (or potentially active) processors and communities who might otherwise be displaced from the fishery.

While restrictions on ports of landing or registered processors may seem attractive, because of the anti-competitive and political effects of such measures, the costs of such restrictions on ports of landing or requirements to off-load at a small number of registered processors should be considered.

To the extent possible, industry participation in the management of limited access programs, particularly in terms of administration, monitoring, and enforcement should be encouraged. Co-management and corporate management alternatives can provide a

different set of compliance incentives which may make them attractive, compared to the continuing individualistic incentives under other alternatives.

There are additional enforcement issues which need to be considered during the design of other aspects of limited access programs. For example, if IQs vary between seasons, with provision for a percentage of overage, then both monitoring and enforcement would be more difficult. Whether the quotas or license are assigned permanently or for one season will create different incentives for poaching, and thus costs of monitoring and enforcement. Transferability, particularly transfers of active licenses or ITQs, also increases the complexity of monitoring. In designing a limited access program, its specific features should be evaluated, in part, in terms of their effects on the cost and effectiveness of enforcement and compliance. While it is also generally true of the FMP development and amendment process,

> **Identifying the monitoring and enforcement resources required under various alternative limited access programs during the design phase is critical to their efficient use**.

As a general rule, complex limited access programs require relatively high levels of administration, monitoring, and initial set-up costs. However, a complex license limitation program (e.g., fractional licensing) does not generally match the same level of complexity as an ITQ program. License limitation and other effort restriction programs may be easier to monitor and to enforce than IQ and other catch restriction programs. Since a license limitation program determines *input* parameters rather than *output* limits, whether it can achieve equivalent benefits to the resource stock may be problematic. Nor is it as likely to lead to reductions in fleet capacity (although this is not a foregone conclusion). But the relatively high monitoring and enforcement costs of an IQ program must be included in the benefit-cost analysis of the program. If the program is designed without consideration to enforcement and compliance costs, it is less likely to provide the net benefits needed to justify the program.

Finally, limited access programs (particularly IQ programs) are likely to accrue substantial start-up administrative, monitoring, and enforcement costs. However, to the extent that these programs rationalize the fishery by reducing fleet size and by encouraging self-enforcement, these costs will likely decline over time. A comparison should be made between the cost and effectiveness of enforcement with a proposed limited access program and those of a management system that consists of a myriad of constantly changing management measures.

In the design phase of limited access programs, and in the proceedings of national working groups on limited access, it is

vital to identify the particular features of limited access programs that promote or deter compliance. To the extent that programs are viewed as fair and practical, compliance will be enhanced. To the extent they are viewed as unfair or impractical, there will be a lower level of voluntary compliance. Evaluation of the design and implementation of limited access programs in Federal marine fisheries of the United States is an important objective in the meeting the long-term goal of sustainable fisheries which maintain involvement of the fishing industry and fishing community in management decisions.

III.E. Monitoring

The monitoring and fishery-dependent data needs of limited access systems may be more detailed than traditionally regulated open access systems, but not necessarily. Simple comparisons cannot be made between the adequacy of data for traditional open access management and limited access management for three reasons: First, within each of these two broad types of management, the data requirements will vary significantly depending on management objectives, the specific management measures which are used, and the characteristics of the fishery and its participants. Second, limited access management may require more of one type of information but less of another. Third, the management system used affects data requirements as well as the difficulty of meeting such requirements.

Regardless of the type of management used, its effectiveness will depend heavily on the information systems that are developed. Therefore, it is important that the monitoring and data system needs of limited access management programs be integrated into the wider NMFS fisheries statistics system (e.g., the Fisheries Statistics Strategic Plan). And it is critical to identify and fund inter- and intra-agency data sharing for compliance monitoring (see also Section III.D). This will increase the ability of the agency to take advantage of economies of scale in monitoring and enforcement, to avoid duplication of effort, and to ensure that the information collected fits together.

There are four categories of data needs related to limited access systems:

1. Eligibility and qualification data on historical participation.

2. Tracking the transfer of limited access rights (permits, quotas, etc.).

3. Fishing mortality and effort data; and,

4. Biological, economic, and social assessment information.

The first and second types of data were discussed, respectively, in the sections on transferability and eligibility. The last two types of data are discussed below.

Obviously, as discussed in the section on coordination, it is necessary to coordinate data collection plans to take advantage of economies of scale in monitoring and enforcement. And it is critical to identify and fund inter- and intra-agency data sharing for compliance monitoring (see also III.F.). However, one of the critical problems of individual allocation systems, as discussed below, is the balancing of the costs of monitoring with the benefits of the limited access program.

Landings, effort, and other fishery operations data: Critical steps in designing a limited access system are identifying data needs, determining the reporting and monitoring requirements that will meet those needs in a cost-effective manner, and determining the cost and source of funding for monitoring programs.

Monitoring requirements are largely determined by the nature of the limited access right. In simple limited entry, there may be no specific limited access monitoring requirements for landings or effort data at all, or there may be relatively minor requirements if an annual requalifying level of fishing activity is required to maintain a permit. On the other hand, ITQ programs may have extensive data reporting requirements, particularly if they involve at-sea processing, bycatch, etc. A critical step in the design phase of a limited access system is identifying data needs, and establishing the appropriate reporting requirements for vessels, dealers, etc. in order to meet the objectives of the limited access plan.

Aggregate fishing mortality and effort data are required to assess the status of stocks, to set the appropriate optimum yields (OY) and overfishing levels, and to ensure that OY is attained and that the overfishing levels are not exceeded. These data requirements are similar with either open access or limited access management. However, the difficulty in collecting adequate data will depend on the management system that is in place. For example, if the management system tends to increase the amount of catch that is discarded, the amount of unobserved fishing mortality (i.e., fishing mortality due to an encounter with fishing gear that does not result in capture of fish by a fisherman) or the extent to which landings are underreported, it will be more difficult to obtain adequate estimates of total fishing mortality. In some cases, IQ management would be expected to increase high-grading, decrease other types of discards, and increase under-reporting of catch unless monitoring

programs are improved.[26] However, traditional management measures such as trip limits and minimum size restrictions also result in discards. Trip limits and even TACs can result in under-reported landings, and mesh size limits can result in increased unobserved fishing mortality. Therefore, it is not clear that IQ management necessarily increases the difficulty of obtaining adequate estimates of total fishing mortality. The cost recovery program that the Magnuson-Stevens Act requires for an ITQ program but prohibits for an open access fishery could result in improved monitoring of total fishing mortality under ITQ management.

With respect to discards, the policy questions for the agency are to what extent should observers act as quasi-enforcement agents for the purposes of observing an individual's catch, to what extent the agency (or the industry) can afford 100% observer coverage, and to what extent is it technically, operationally and economically feasible to weigh all catch using certified scales in a specific fishery.

In limited access systems which grant individual harvest rights (e.g., IQs), the agency should be able to monitor an individual vessel's total catch (removals) or landings with a reasonable degree of accuracy. This is significant not only for scientific assessment of the basic fishery resource (a typical fishery management challenge) but in these individual allocation systems, for compliance challenges.

A system which includes cross-checking of reported data with data from independent sources probably is necessary to ensure adequate compliance. In some cases the cost of adequately monitoring the fishery under ITQ management will be so high that this form of management would not be economically feasible. An ITQ program that is based on total catch rather than landed catch can address a broader range of management issues; however, the monitoring costs could be prohibitive if full observer coverage were required for adequate monitoring and if the catch were taken principally with small vessels.

The monitoring problems which are peculiar to IQ and ITQ programs may also apply to effort allocation programs but less directly. In these cases the problem of monitoring catch is replaced with the problem of monitoring vessel activity (e.g., days at sea). While this may be a more tractable problem, it does require a port-agent or VMS (vessel monitoring system,

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[26] High-grading and a number of similar disincentives for stock management under ITQ and similar limited property rights regimes are partly symptomatic of the complexity of common pool resources and the incomplete property (private or otherwise) rights involved in current limited access systems.

including satellite transponders) or similar systems for conducting a daily inventory of vessel activity.

Biological assessments: Limited access programs, particularly those that confer a marketable right, are designed to meet a wider variety of fishery management objectives than traditional open access management. But in attempting to meet those objectives, they raise the question of individual monetization of those rights, and the expectations of the participants that the fishery will otherwise be managed to meet their financial commitments. This may put the agency in an even less enviable position than with open access management systems.

An important difference between ITQ management and traditional management with or without license limitation is that the former makes use of the market mechanism to address many allocation problems. One advantage of ITQ systems is that fishery managers do not need to have the types of information required to make the allocation decisions that will tend to increase the benefits the nation receives from fishery resources. By decreasing the scope of the allocation decisions fishery managers have to make on an ongoing basis, ITQ management allows them to focus on scientific issues that will increase the understanding of stock dynamics and ecosystem relationships. And with adequate ITQ markets, ITQ prices can provide information the will be useful in making better management decisions and in monitoring the economic performance of commercial fisheries.

Of particular concern is the potential need for extensive and accurate stock assessments for ITQ management. IQ and ITQ fisheries may result in demands for more detailed stock assessment because of the considerable financial stake of each vessel in their particular share of the total allowable catch. Several issues which should be faced include:

- **Should additional stock assessment, monitoring, and compliance resources be directed toward IQ and ITQ fisheries?**

- **Should stock assessment techniques that result in large fluctuations in quota from year-to-year, or which involve large in-season adjustments), be smoothed to allow for greater stability in annual harvests?**

- **Should quota holders have more influence in setting TACs than under the current systems?**

- **Should quota holders assist in funding--or carrying out--stock assessments, and what are the implications of industry-funded stock assessments, particularly for inter-related fisheries?**

- **Should quota holders pay the full monitoring and enforcement costs in their fisheries?**

- **Should quota holders be responsible for conducting their own biological research and monitoring activities, subject to government scrutiny?**

It should be clear from these questions that the property rights aspects of some limited access systems, particularly ITQs, raise important questions concerning the relationship between the fishing industry and fishery management agencies. Many of these are philosophical and will be worked out in the context of individual limited access programs. Anticipating these questions early in the limited access design process should facilitate that process.

Economic and socio-cultural assessments: The explicitly allocative nature of limited access programs will necessitate greater detail and depth in social and economic impact assessments in the design and approval stages (e.g., the Regulatory Impact Assessment). A range of information might be useful in evaluating the program, fine-tuning quota transfer mechanisms, and understanding the feedbacks between fisheries economics and biological outcomes (e.g., catch rates).

This raises the question of how to increase social and economic data gathering and how to organize the analyses necessary to assess the status of limited access fisheries. Subsequent to the implementation of a limited access system, particularly one which uses a property-rights approach (e.g., ITQs), the relative roles of the fishing industry and the fishery management agencies may change in terms of responsibility for collecting and compiling socio-economic information and performing economic and socio-cultural assessments. Information should be collected to enhance the evaluation of the performance of the limited access systems, and regular data collection through the permitting process should continue (e.g., collection of vessel characteristics and values of permit transfers). However, more extensive socio-economic data collection may not be required if market mechanisms are relied upon to handle allocation questions. Experience with such programs should provide greater guidance on this question in the future.

III.F. Permit Markets

Permit markets are intimately connected with the issue of transferability of limited access rights, with economic efficiency and generation of economic rent, and even with rent collection. Part of the rationale behind transferable permits and quotas is that transferability increases the efficiency of the fishery. Markets for ITQ shares can, under appropriate conditions, convey to current and prospective participants,

through price signals, the future valuation of the fishery. ITQ prices can also, in theory, measure resource rents for government collection. And ITQ markets can play an important role in efficiently balancing overages and underages (catches above or below the Total Allowable Catch for an individual vessel) of quota holding for individual fishermen.

Yet two of the principal implementation issues are whether efficient markets can develop and what form those markets might take. It may be that the markets which develop for permits, quota, and other forms of fishery rights would be *incomplete*. That is, there may be too few participants, too few trades (sales, exchanges, etc.), or the market may be dominated by a few major players. An incomplete market is subject to a number of inefficiencies which might offset the proposed advantages of transferable permits.

From an economic ideal perspective, permit markets would involve many buyers and sellers (and lessors) of quota shares, vessel permits, etc. Enough trades would occur to produce comparatively stable ITQ market prices. When few and infrequent trades occur, ITQ markets can yield prices that fluctuate over a wide range and which consequently convey little reliable information on the expected valuation of ITQs. When few trades occur, it is also time consuming and costly for fishermen to purchase quota to balance overages and underages of quota holdings, and they might instead simply dump overages rather than purchasing quota to cover this catch.

Noncompetitive or concentrated markets and strategic bargaining behavior in thin markets can also be problems. When there are only a limited number of permit or quota holders, each with a sizeable holding, then the markets are unlikely to be competitive in an economic sense. In these instances, quota and permit prices would not convey the appropriate valuation signals for fully efficient and effective investment, harvesting, and processing decisions by prospective participants. Quota and permit prices may also not serve as a reliable guide to economic rents for government taxation or cost recovery when markets are thin.

Nonetheless, the permit market may be far from perfectly efficient and still be more efficient that current biological and operational control fishery management systems.

Two substantive issues raised by the Limited Access Working Group are:

Investigate the problem of ITQ market structure.

Determine whether a limit should be placed on how much harvest privilege a person can hold or use.

The evidence on existing ITQ markets is mixed, with aspects of low volume, high transaction costs, and strategic behavior in "thin" markets (Squires, 1995). Therefore, there are substantive policy questions concerning whether the government should play a role in setting up and monitoring these markets, and whether the agency should preclude "monopolization" of limited access rights.

Section IV. EVALUATING LIMITED ACCESS PROGRAMS

Although simple limited entry and other forms of license limitation have been in effect in some parts of the United States for over 30 years and have been increasingly implemented in Federal fisheries, complex limited entry programs such as ITQs, fractional licensing, and co-management systems remain relatively untested in the Federal system. The purpose of this report has been to make the design and implementation of new and revised limited access programs as effective as possible. Yet the reality is that some impacts will be unanticipated, some mistakes in design and implementation will occur, some problems will be unforeseen, and there will be changes in the objectives for management and the external factors that determine which management measures will be more effective in meeting those objectives.

Therefore, it is an integral part of any limited access implementation plan to:

Develop a comprehensive plan to evaluate the effectiveness of the limited access program and to propose revisions if necessary

The purpose of evaluation is to systematically apply social science research techniques to assess the conceptualization, design, implementation, and utility of social intervention programs (Rossi & Freeman, 1993, p. 5), like limited access programs. Central to this is a monitoring program which can evaluate the degree to which the limit access program is meeting its initial objectives, and what impact it has had on the fishery participants, the public, and fishery resources. This evaluation plan should be developed during the scoping and design process, as part of the final decision process, and prior to implementation of the actual limited access program. It should be prepared in consultation with all the interested parties and seek a full assessment of the effectiveness, efficiency, and equity of the limited access program. And it should include measurable objectives and performance standards to the extent possible.

The significance of such a program is that it builds planning and evaluation from the beginning of the design process and includes conservation, economic, and social benchmarks for measuring progress. It also ensures the ability and intention to

objectively (or at least systematically) to measure the success of the program.

And while evaluation of particular limited access programs after their initial implementation is important, so is evaluation of limited access as an overall system of management under the Federal aegis. Periodic reviews of limited access programs in the nation should be conducted. This review should consider all the limited access programs implemented (including existing programs) and look at program success and failure in terms of the program's specific objectives (preferably as codified in the FMP or FMP amendment's objectives and the specific limited access program's evaluation plan). It should identify steps or processes in the scoping, design, and implementation phases which contributed to these outcomes. It should compare different types of limited access programs and it should compare the success of limited access programs across regions. These reviews should build on the National Academy of Sciences review of ITQs and CDQs mandated by the Magnuson-Stevens Act (1996).

Section V. CONCLUSION

The purpose of this report has been to offer fishery managers advice and recommendations on the design, implementation, and evaluation of limited access programs. All of the administrative procedures which normally apply to the development of fishery regulations also apply to limited access programs. However, because limited access programs continue to be both innovative and controversial, largely because of their potential for allocating marketable rights to fishery resources, it is even more important that they be designed and implemented systematically and soundly. Identifying and addressing the distribution of benefits and costs is critical in gaining acceptance of a limited access program. Yet it is clear that there are excellent reasons why limited access should improve fishery management in the United States.

The tasks involved in designing, implementing, and evaluating limited access programs (especially relatively *complex* limited access programs) suggest that new approaches are required. This report should be a living document, taken by fishery managers in each region and nationally to be utilized in a manner which assists fishery management. Some elements of these recommendations may find their way into the administrative procedures which the agency and the regional fishery management council will follow in implementing FMPs and FMP amendments. Some issues of property and use rights and similar changes to the basic structure of fisheries management in the U.S. may be reflected in changes to the public law which guides fisheries management. But much will remain at the level of craft. Therefore, periodic review and re-evaluation of the entire process by which limited access systems are designed and

implemented will be required. This report provides a baseline from which to judge such progress.

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List of Issues: NMFS Limited Access Working Group

The following issues were generated by the Limited Access Working Group at its 1995 meeting in La Jolla using facilitated group decision techniques. They represent the spectrum of concerns and interests which formed the focus for these issues and options. The Limited Access Working Group also clustered the issues into the headings which comprise this report.

Section

Issue # Issue text

Section I. Introduction

A. Purpose of Report

B. What is Limited Access?

C. Scoping for a specific limited access fishery

61 Define the nature of a limited access right [see also #83, Legal: who owns the resource]

83 Determine who owns the resource. [see also #61, Policy: nature of the right]

10 Accommodate uniform national policies with regional perceptions of needs [also a Coordination issue]

20 Balance special interests on Councils with broader public interest (including national interest)[also a Coordination issue]

38 Coordinate regional and inter-regional plans to take advantage of economies of scale in monitoring and enforcement [also a Coordination issue]

70 Determine whether inclusion of native groups in individually-based programs (e.g., ITQs) is appropriate

69 Determine whether limited access donation rights are appropriate or legal

79 Identify process for reserving some shares for the government

84 Determine whether moratoriums or license limitations are necessary as a precondition or baseline for other limited access alternatives

3, 53 Identify the specific problems in the individual fishery that limited access will resolve

1, 85 Determine whether limited access is appropriate for the particular fishery.

15 What kind of limited access program is most appropriate for this fishery?

12 A thorough analysis of limited entry alternatives to develop a sense of proportion or balance between the complexity and costs of the program and its anticipated benefits.

66 Determine actual number of vessels and fishermen prior to choosing the limited access alternative

68 Explain how limited access will help achieve Optimum Yield

8 Resolve issues of uncertainty amongst fishermen and the public about the status of the fishery

13 Determine how many and which participants (and potential participants) are not included in the limited access program (i.e., who is out?)

27 Resolve the issue of participation (including both initial selection and continuing qualification) in ways that fit the participants' sense of appropriate behavior (norms)

29 Avoid creation of a separate or privileged class of selected participants

73 Reconcile fleet rationalization (downsizing) with community stability

52 Identify and accommodate the rights of native and indigenous populations.

43 Understand the political, social, and economic characteristics of affected communities

53 Identify and prioritize social objectives and evaluate the effectiveness of alternative limited access programs in achieving them.

68 Explain how limited access will help achieve optimum yield in the fishery.

67 Identify inter-relationships with non-limited access fisheries [addressed in section II.B: socio-economic considerations]

Section II. Designing a Limited Access Program

A. Alternative programs

87 Determine to what extent alternative limited access options are feasible under current legislation (and decide whether to seek legislative relief if necessary and desirable) [see also #s 36, 58]

36 Determine degree of co-management that is possible and desirable

58 Determine extent to which NMFS or Councils can initiate independent management organizations, such as co-ops or corporations

63 Consider options for vessel or license buy-back

77 Develop a rent-neutral tax instrument to prevent distortions in long-term stock equilibriums

B. Nature of the Right

61 The nature of the limited access rights needs to be specified clearly, specifically, and as simply as possible.

57 Determine conditions for terminating a limited access system

51 Determine what level of windfall profit is acceptable (discussed primarily in Section III.D)

69 Determine whether donation of limited access rights is appropriate (discussed primarily in Section III.C)

C. Eligibility

9 Appropriate use of control dates

11 Matrix of eligibility criteria

19 Define standards of evidence in establishing eligibility

27 Resolve issues of participation in ways that fit the existing participants' and the affected fishing community's sense of appropriate or normative behavior.

18 Resolve issues of equity in and dependence on the fishery in defining participation

35 Identify a data source to determine who is "in".

D. Transferability

72 Decide whether limits should be placed on who may be the recipient of harvest privileges through transfer

37 Determine transferability issues for non-quota based rights

19 Define standards of evidence for establishing eligibility [follows on from Section III.B re initial issuance]

21 Determine matrix of eligibility criteria [follows on from Section III.B re initial issuance]

E. Cooperation and Consensus

2 Seek consensus on availability of limited access for the particular fishery

34 Ensure clear communication in regulatory development

28 Define appropriate levels of State-Federal cooperation

42 Define scope of program across regions

44 Weigh development of new limited access programs against existing programs and agency priorities

47 Ensure that limited access programs are integrated with existing programs

67 Identify inter-relationships with non-limited access fisheries [addressed in section II.B: socio-economic considerations]

74 Resolve problems of ITQ program inter-relationships with bycatch fisheries

25 Prioritize education and front-end loading of program specifics to various groups affected by the limited access program

F. Equity and Dependence: Social Impacts

82 Identify the relationship of limited access systems, particularly ITQs, to aquaculture programs

68 Explain how limited access will help achieve optimum yield (the economic and social part of MSY)

65 Determine the impact of the limited access program on processors and consumers [and fishing communities]

43 Evaluate the impact of the limited access program on the affected communities (particularly if rationalization and consolidation are anticipated)

67 Identify the repercussions of limited access programs (particularly IQ and ITQ programs) on related fisheries

55 Consider the effects of limited access programs (particularly IQ and ITQ programs) on multi-species fisheries

18 Resolve issues of equity in and dependence on the fishery in defining participation

Section III. Implementing a Limited Access Program

A. Implementation Plan

45 Meet requirements for various regulations (e.g., Paperwork Reduction Act)

16 Need to maintain simplicity in number and depth of regulations

22 Need to research and anticipate legal issues in initial issuance, transfer and enforcement

25 Prioritize education and front-end loading of program specifics to various groups affected by the program

B. Initial issuance and appeals

17 Define an appeal process

26 Establish guidelines for hardship criteria (initial issuance and appeals)

32 Interim use permits

62 Sort out ownership, use, and initial issuance

C. Costs and Rent Recovery

23 Emphasize the relationship between eligibility criteria and transfer limitations and the ability of the agency to fund and administer the program

33 Determine the source of funds for financing enforcement

16 Need to maintain simplicity in numbers and depths of regulations

40 Identify and fund inter- and intra-agency data sharing for compliance monitoring

46 Estimate the cost and complexity of implementation

75 Identify the costs of data needs

31 Need to design a way to collect rent from the fishery

71 Internalize costs of enforcement compliance monitoring, issuing of coupons and licenses, and stock assessment.

7 Need to fund (or recover) administrative expenses

77 Develop a rent-neutral tax instrument to prevent distortions on long-run equilibrium stocks

86 Seek rent collection authority

D. Enforcement

4 The importance of compliance to the success of a limited access system: perception vs. reality

6 Identify issues that promote or deter compliance

14 Enforceability of limited access alternatives

24 Identify the enforcement resources needed to achieve the desired level of compliance

25 Prioritize education and "front-end loading" of program specifics

49 Develop a method for swift and sure adjudication of penalties

50 Determine to what extent fishing rights can be penalized or forfeited as an enforcement action

56 Link incentives to conserve under a limited access system to reduce costs of enforcement

60 Establish sanctions as part of regulations

80 Determine if industry-financed (or sponsored) governance activities have special implications

38 Need to coordinate plans to take advantage of economies of scale in monitoring and enforcement (follows on from Section II.B.: Coordination]

40 Identify and fund inter- and intra-agency data sharing for compliance monitoring.

48 Determine to what extent individual operators can be held accountable for precise amounts of total catch

E. Monitoring

30 monitoring and evaluating the limited access system

35 identify a data source to determine who's in

38 coordinate data collection plans to take advantage of economies of scale in monitoring and enforcement.

40 identify and fund inter- and intra-agency data sharing for compliance monitoring.

41 establishing the appropriate reporting requirements for vessels, dealers, etc. in order to meet the objectives of the limited access plan.

54 develop and implement a system for recording and enforcing liens against harvest privileges

75 identify the costs of data needs.

64 need for extensive and accurate stock assessments for ITQ management.

66a Determine how many participants there are

F. Permit Markets

81 Investigate the problem of ITQ market structure (including volume) and role of ITQ priorities (including rent recovery).

76 Determine whether a limit should be placed on how much harvest privilege a person can hold or use.

Section IV. Evaluating Limited Access Programs

A. Evaluation

39 Develop a comprehensive plan to evaluate the effectiveness of the limited access program and to propose revisions if necessary.

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