

# Use Rights in Fishery Systems

Anthony T. Charles, Saint Mary's University, Halifax, Nova Scotia, Canada

**Abstract.** This paper provides an overview of use rights, that sanction fishers, fisher groups and fishing communities to access and use fishery resources. The paper first reviews the various forms of use rights, ranging from access rights (territorial use rights and limited entry) to quantitative input (effort) and output (harvest) rights. It then explores the factors impacting on the determination of a desirable portfolio of use rights within specific circumstances. Given that there is no universally optimal arrangement, the choice will depend on such factors as (a) society's objectives for the fishery, (b) the structure, history and traditions of the fishery, and (c) the relevant ecological, social, cultural and economic environment. Finally, the paper explores two major policy issues concerning use rights, concerning the choice between holding rights at the individual versus collective/group levels, and the choice among institutional arrangements for organizing use rights, specifically market-based versus strategic planning mechanisms.

**Keywords:** access rights, harvest quotas, limited entry, effort rights, TURFs, ITQs

## 1. INTRODUCTION

Use rights sanction holders of those rights to access and harvest the fishery resource – perhaps subject to specific conditions imposed by society on fishing activity, behaviour, etc. The careful distribution, allocation and/or recognition of use rights can therefore be viewed as a response to the problems of open access. Accordingly, there is an emerging focus on use rights as crucial to success in fishery management. This is paralleled by a corresponding emphasis on *management rights*, the rights to participate in management decision making, perhaps through the approach of *co-management*, as a response to the failure of top-down fishery management.

Both of these, use rights and management rights, are forms of property rights. Within this perspective, the focus of use rights on access and harvest contrasts with the set of *collective choice rights* (Ostrom and Schlager, 1996) that include management rights as well as *exclusion rights* (to determine the qualifications necessary to hold use rights) and *alienation rights* (authorising the transfer or sale of other rights). The idea of use rights is by no means new. Indeed, fishery use rights have existed for centuries; such rights, it seems, have most often been based on *usufruct* – the right to use another's property, and benefit from that use, without diminishing or destroying that property (see, e.g., Symes 1998).

The discussion of use rights in the present paper lies on two principal themes: (1) the various forms in which use rights can appear, and (2) the challenge of identifying a desired *portfolio* of use rights in a given situation. For

more detailed treatment and a more complete bibliography on the subject, the reader is referred to Townsend and Charles (1995), Charles (2000) and Charles (2001).

## 2. FORMS OF USE RIGHTS

Use rights in fisheries can be considered through the posing of two broad questions:

- *Who can go fishing?*
- *How much fishing can take place?*

This leads to the grouping of use rights within two categories, namely access rights and withdrawal (harvest) rights, each of which has two major components, as outlined here (and described in more detail later).

### *Access rights*

...refer to the capability to enter a fishery and participate in it (typically subject to constraints on how, when and where participation is allowed); the best-known forms are:

#### *Territorial Use Rights in Fishing (TURFs)*

...rights to engage in fishing within a certain specified geographical location

#### *Limited entry licenses*

...rights assigned through licensing, or other means, to limit participation.

**Withdrawal (harvest) rights**

...refer most often to the intensity of resource use, as reflected in the level of fishing (input rights) and the quantity harvested (output rights):

**Input rights**

...concern the extent to which fishing activity is allowed to take place, involving rights to certain levels of fishing inputs such as fishing time, boat size, amount of gear, etc.

**Output rights**

...concern the allowable output of fishing, typically harvest of a certain specified quantity of fish, such as a fraction of a TAC (although a TAC is not a use right in itself).

Note that the various forms of use rights may be held by various fishery participants: a fishery sector, a fisher organization, a fishing community, a corporation and/or an individual fisher. Each right can be subject to a range of possible restrictions, as discussed below.

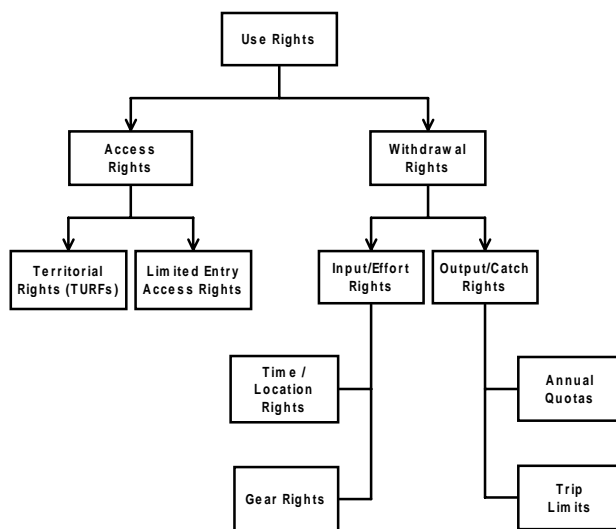


Figure 1. A Framework of Fishery Use Rights

**2.2 Territorial Use Rights in Fishing**

Territorial Use Rights in Fishing (TURFs) involve the assignment of rights to individuals and/or groups to fish in certain locations, generally, although not necessarily, based on long-standing tradition ('customary usage'). A classic reference on TURFs is that of Christy (1982: p.1), who noted that "as more and more study is given to the culture and organisation of fishing communities, there are indications that some forms of TURFs are more pervasive

than previously thought to be the case, in both modern and traditional marine fisheries." While TURFs are often identified with developing regions, there are many important cases in developed areas, as in coastal Japan (e.g., Ruddle 1989) and in lobster fisheries on the north-eastern coast of North America (Acheson, 1975; Brownstein and Tremblay, 1994). Unfortunately, TURF systems are often poorly understood by governments, and their potential value in management is not fully recognised. Indeed, in some fishery systems, TURFs may be among the most effective forms of management (Ruddle *et al.*, 1992). This is especially so if implemented and regulated so as to avoid excessive transaction costs (e.g., perhaps within a framework of existing institutions), and/or if the resulting costs are out-weighed by the inherent value of the institution involved.

**2.3 Limited Entry**

Limited entry, in the form of a limited number of licenses to fish, specifies a use right - the right to participate in the fishery. Limited entry has been successful, in a number of fisheries, in demonstrably slowing the rate of expansion of fishing capacity, and generating substantial profits for license holders, as reflected in the high value of licenses. However, limited entry cannot, by itself, solve all fishery problems. In particular, it does not overcome the *rush for the fish* (in which each fisher seeks to catch the fish first) nor the corresponding incentive for *capital stuffing* - expanding each vessel's fishing capacity beyond the level that would be 'efficient' for the fishery as a whole. The existence of these problems does not, however, negate the crucial nature of limited entry. Instead, it highlights the need for a 'management portfolio' that combines limited entry with tools such as quantitative allocations of inputs or allowable catches, within a suitable form of regulatory institution.

**2.4 Effort Rights (Quantitative Input Rights)**

Input rights involve the assignment to individual fishers, groups or communities of allowable levels for such inputs as time fished, vessel size, amount of gear, and gear attributes. This can be a viable approach to management, as long as two key problems are dealt with. First, there is an incentive among fishers to manipulate the controlled inputs (perhaps through greater intensity of use) and to expand the unregulated inputs to achieve greater output. This implies the need for a multi-dimensional approach to input rights, by implementing rights over not one but a range of inputs. Second, there is a natural process of technological improvement that gradually increases the effectiveness of any set of inputs over time. If monitoring of this effect, and subsequent adjustments, are not carried

out, the conservation impact of fishing by a given fleet (even one with a constant number of boats) may be underestimated, leading to over-exploitation. An individual input program must therefore adjust for such improvements in fishing efficiency, perhaps by reducing the aggregate level of allowable inputs over time, to reflect the rate of efficiency increase.

## 2.5 Harvest Quotas (Quantitative Output Rights)

A Total Allowable Catch (TAC) is a conservation control but not a use right, since setting a TAC makes no statement about the rights to catch the fish. The situation changes, however, if that TAC is subdivided to sectors of the fishery, individual fishers, or communities, in which case these shares of the TAC represent quantitative output rights - collective or individual use rights over the corresponding 'shares'. Several variations may occur:

- The rights may be held and managed collectively by a *sector* of the fishery (e.g., with specific allocations made for small boats or for large boats, for hook-and-line fishers or for net fishers, etc.);
- The rights may be assigned to communities, as *community quotas*, so that not only is collective control exerted, but decisions on use of the quota can explicitly reflect community values and objectives.
- The rights may be allocated to individual fishers, either within a fishing season, as *trip limits* or on an annual basis through *individual quotas* (IQs) that may be *transferable* (ITQs) or *nontransferable* (INTQs).

Just as input rights systems face undesirable incentives, as noted above, so too must harvest rights systems deal with incentives to thwart output controls, through under-reporting of catches, and through dumping, discarding and high-grading of catches. Efforts to deal with these problems include various approaches to monitoring of catches and of at-sea behaviour.

## 3. CHOOSING A USE RIGHTS SYSTEM

The preceding discussion has outlined the range of possible use rights options. Here, we turn to the fundamental issue of putting a use rights system into place. This involves addressing three key questions:

- Is an effective system of use rights already in place within the given fishery?
- If not, what use rights options, or set of options, are best for the given fishery?
- What fishery policies guide how the desired option(s) should be implemented?

### 3.1 Are use rights already in place?

In existing fisheries, particularly those with a long history, it may well be that use rights have already developed naturally over time, perhaps put in place by fishers themselves or by their community. It is not surprising that use rights would have emerged, since there are clear benefits to defining the group of fishers entitled to fish in a certain location, both for the fishers themselves and for the well-being of the fishing community. Social scientists have played a major role in documenting not only existing 'indigenous' use rights systems, but also systems that had been in place in the past, but which were displaced by 'modern' central management. In many cases, the process of understanding local use rights accompanies that of accessing local knowledge about the fishery and its environment – so-called traditional ecological knowledge (TEK). If use rights already exist, it is crucial to understand how effective those use rights are, and whether there are available mechanisms to reinforce them. Certainly, it is likely more efficient to accept and reinforce existing rights than to attempt the development and enforcement of an entirely new regime.

### 3.2 What is the 'best' set of use rights?

Suppose that either no use rights system is in place, or that if use rights do exist, there is a recognised need for substantial changes. Then what is the preferred use rights option? This is a major question, but addressing it requires recognition that (1) the world's fisheries are highly diverse biologically, economically and socially, and (2) the relative impacts of the various advantages and limitations inherent within each use rights approach vary from fishery to fishery.

Given these two points, what is 'best' will depend on the fishery in question, and it is important to understand how particular fishery circumstances influence the desirability of certain options over others. Clearly, it is unlikely that any single use rights approach will produce optimal results in every fishery, so it may be preferable to pursue a *portfolio* of rights – a combination that is most acceptable, helps the fishery operate best, and maximizes benefits, within the given context. To this end, it is important to understand the structure and underlying nature of the fishery:

- What are society's objectives in the fishery?
- What are the fishery's structure, history, traditions?
- What are the relevant social, cultural and economic environments?
- What are the key features of the fish and ecosystem?

Responses to these questions might guide our choices, even while recognizing that there is no consensus about which use rights options are most compatible with which fishery features. For example, sedentary fishery resources may be especially amenable to TURFs. Stocks for which biomass estimates are unreliable, or for which regular catch monitoring is too expensive, may be best approached through effort rights, while highly migratory or transboundary stocks, for which the allowable catch must be allocated among nations, may focus on harvest rights. Fisheries in which the technology is relatively uniform may be able to effectively utilize input rights, while in fisheries with many different gear types, harvest rights may work better. Of course, in a given case, the importance of each of the fishery characteristics must be weighed in assessing the pro's and con's of use rights options, before arriving at a desired solution.

### 3.3 What policy issues must be considered?

Two key issues are outlined here: the choice between individual and collective (group) rights, and that between market-based and community-based rights.

#### *Individual vs. Collective Rights*

A crucial aspect about use rights is the difference between those instituted at the level of the individual fisher and those at a collective level – e.g., the community or the fisher association. A choice between these should depend on both the historical context and the fishery objectives being pursued. For example, in a fishery that has developed relatively recently, and that has an industrial focus, there may be a natural inclination to an individual rights system. On the other hand, collective rights are historically of greatest importance in longstanding traditional fisheries. The feasibility of collective rights may well depend on such factors as the cohesiveness of the community involved, experience in and capacity for local management, geographical clarity of the community, and its overall size and extent. For those cases where such rights already exist, or where the conditions are conducive to their introduction, it is useful to document the potential benefits of collective rights (as in ‘community quotas’ for example). For example, can the community, through moral pressure on local fishers and suitable management institutions, create a collective incentive for resource stewardship and effective local enforcement?

#### *Institutional Mechanism: Market vs. Strategic Planning*

A key issue in use rights concerns the choice between two institutional arrangements for determining who are to be the fishery participants – a market-based approach, and one based on multi-objective strategic planning. The

former involves a reliance on market forces, as in ITQ systems, with fishery participation and allocation of allowable catch or effort determined through the buying and selling of rights. In economies dominated by markets, these may be relatively easily-implemented rights systems. Broadly speaking, such a system can be expected to display the various advantages and disadvantages of the overall market system. In contrast, a strategic planning approach assigns use rights in a more deliberate manner through a multi-objective decision making process. This is carried out by institutions operating at the relevant scale (whether community-based, regional or national), with rights specified through a combination of legislation, government decisions and traditional/informal rules, and with those rights operating at either the individual fisher level or at the group (collective) level.

Which of these arrangements will be more efficient is an empirical matter, dependent on the perspective of interest. For example, vessel efficiency may be higher in a market approach but community/regional economic efficiency may be higher in a strategic planning approach. The latter could occur if community group dynamics lessen conflict and raise management efficiency, or if a market approach leads to social dislocation and lower regional benefits. While the particulars of a given situation are crucial, it may be possible, in the spirit of Berkes’ (1986) analysis, to hypothesize some basic directions:

- A strategic planning approach may be appropriate if the fishery structure is small-scale/artisanal with clear ties between fishers and their communities. A market based approach may be suitable if the fishery has a predominantly industrial, capital-intensive focus.
- A strategic planning approach may be preferable if history and tradition play a major role in fishing activity and management, while a market approach may be suitable if the fishery does not play a major role in supporting coastal communities.
- A strategic planning approach may be most feasible if there are multiple fishery and non-fishery goals, and if fishery management requires the balancing of these objectives. On the other hand, a market approach may be desired if profitability dominates over community and socioeconomic goals such as equity, employment, and health of the local economy.

It should be noted that intermediate options may also be considered. These include individual-based, non-market schemes, such as a community quota that is managed cooperatively, but with sub-divisions into non-transferable individual quotas, or a local trap fishery on a sedentary species that is managed through collectively-developed policy but individual (trap limit) input rights. Such approaches may best balance the desirability of individual rights with the benefits of social and community stability.

#### 4. CONCLUSIONS

This paper has provided but a brief, introductory treatment of a major subject in fishery management. By way of conclusions, it may be worthwhile reiterating three fundamental points. First, use rights are clearly crucial in the world's fisheries. Second, use rights already exist in many fisheries, and indeed, in many cases such rights evolved naturally. Third, if use rights do not exist, or current rights are ineffective, the problem arises as to how best to develop and implement an appropriate system. It has been suggested here that use rights may be best seen within the context of a *portfolio*, a suitable combination of input and output rights, qualitative and quantitative rights. In any case, choices will arise, and two of the major ones concern (a) rights being held by individuals or by groups and communities, and (b) the dynamics of rights holdings being driven by the market, or by planning approaches.

The challenges of determining a suitably feasible and/or effective use rights portfolio require sensitivity to a wide range of ecological, economic and sociocultural factors. It can be noted in particular that while economic factors are clearly relevant in assessing the effectiveness and cost of use rights options, it is at least as important to consider biological aspects (such as fish behaviour, migration and such) and social aspects (such as traditional means of management, cultural constraints on fishing, etc.).

This has implications both for research and management. First, it is likely that a useful understanding of use rights in fisheries requires interdisciplinary research. Second, in terms of management, the need to consider biological, social and economic factors reflects the reality that any single use rights option – ITQs, say – may be suitable under some ecological and social scenarios, but not under others. It is important therefore to develop an improved understanding of the various determinants of success in use rights arrangements, and to develop a practical, multi-dimensional process to assess the match of fisheries and use rights options, on a case by case basis.

Without such tools in place, there is a risk that use rights arrangements may be implemented too much on an *ad hoc* basis. For example, in the absence of objective means to assess use rights implications in a given fishery, choices may be made based on the preferences of managers, consultants or funding agencies. Likewise, in the absence of suitable interdisciplinary assessments, the perspective on use rights may be excessively that of a single discipline – economics, say. Such concerns speak strongly for an integrated approach to research, assessment, and where required, implementation of use rights approaches. This should indeed be a key priority for dealing with use rights in coming years.

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