Asian Fisheries Science 1(1988):123-133.
Asian Fisheries Society, Manila, Philippines

https://doi.org/10.33997/j.afs.1987.1.2.003

The Conservation of Fishery Resources and Management of Their Exploitation: The Role of a Licensing System

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Abstract

Two statements of objectives of licensing systems have been examined and found in the main to list broad objectives of resource use only; they fail to identify the features of any licensing system in particular or to justify it or, even more seriously, to validate licensing as an administrative procedure. A review of ideas with respect to the ownership of natural wealth and of concepts of the appropriate forms of management and administration of the use of such wealth serves as a base from which to argue that in each country the fishery operations should be managed by a system closely aligned to units in which the operational decisions are made in conformity with the economic organization of the country; administration of the industry then should relate to the managerial system, not to the operational system.

Introduction

This paper is a contribution to a review of theories that lie behind, and of practices employed in "fisheries management". Fisheries administration is big business today. Few countries lack a fisheries department. In many countries a national fisheries agency reaches down through state, provincial and local offices to look over the shoulder of each fisherman as he casts his net. For offshore waters these departments turn to regional commissions for endorsement of their programs. The cost of these services is not small: patrol vessels are expensive to buy and even more so to operate; offices and staff are not cheap. But the cost will be justified if

without these services the natural resources would be destroyed, and the social and economic price of fishery production would far exceed the nutritional and other value of what is delivered to the consumer. So, the services can perhaps be justified by designating their cost as an overhead charge which is unavoidable if the industry is to operate efficiently. But that begs the question: it asserts but does not prove that administration is indispensable to efficient operation. Moreover, demonstrating a need for what fishery administration may seek to do makes only a partial case for any particular administration, and says little with respect to particular program components.

The licensing of fishermen is one of these program components. Others are: surveillance and enforcement, revenue collection, promotion of development, control of product quality and vigilance over hygiene, and safety at sea. These and others are combined in various ways in different administrations, and the kind and level of activity also vary. Nevertheless, while a country's geography, its laws, the eating habits of its people and other matters, invest each fishery administration with some national individuality, the internationalism of fisheries of the last four decades has imposed common features on most fisheries; it is possible that in some cases it would have been better if that had not happened. It cannot be said that a tropical country's adoption of northern-hemisphere administrative practices must be a mistake, but the possibility of error ought to be recognized, and some lateral thinking ought to be attempted. This paper suggests some lines along which this matter might be approached, and takes "licensing" as material for a case study.

Putative Objectives of Licensing Systems

As a basis for a demonstration of the questions at issue two statements of objectives of licensing systems have been taken and examined with reference to the following legal definition of "license":

License: An authority to do something which would otherwise be inoperative, wrongful or illegal, e.g., to enter upon land which otherwise would be a trespass. A license passes no interest, and a mere license is always revocable; but when a license is coupled with an interest, or if granted for a valuable consideration, its revocation is subject to the terms of the contract between the parties (Osborn 1954).

With this definition as starting point it might seem that the thirteen points quoted below rather overload the term "licensing system", and perhaps corrupt the concept of a license as an instrument of administration.

"In the context of Victorian [Australia] fisheries, the commercial fisheries licensing system is intended to provide the following (from Arnold 1986):

1. a means of identifying all Master Fishermen and the owners of all registered commercial fishing boats and commercial fishing licenses;

2. simple administrative procedures for the issue, renewal and--in some cases--transfer of commercial fishing licenses and ownership of registered commercial fishing boats;

3. administratively simple and equitable means of entry to commercial fisheries;

4. controls on the number of boats, fishermen or gear units that may operate in each fishery;

5. means of reducing fishing capacity, i.e., licenses or gear units, where appropriate;

6. application of standards of suitability of commercial fishing licensees;

7. objective means by which entry criteria can be specified and applied in the licensing of individuals and boats;

8. industry inputs into the licensing and related appeals procedure;

9. timely advice to the field management officers on the details of license-holders for enforcement purposes;

10. timely advice to present or prospective license-holders regarding licensing procedures;

11. flexibility and the opportunity for licensees to diversify within the industry;

12. effective controls by means of penalties such as license suspension or cancellation of monetary fines for prescribed offenses;

13. revenue to contribute towards the cost of the management of the fisheries resources or as a resource rent, as appropriate."

It is to be seen, in the first place, that the term "licensing system" refers, here, not solely to the rules and procedures for issuing licenses and for related actions, but also to the entire administrative apparatus of personnel, offices and equipment required for execution of those procedures (hereafter in this text LS stands for this total system). It will then be seen that a distinction is to be recognized

between an LS as administrative apparatus, and licensing as a procedure for determining who may participate in a fishery.

The several items of the above list have the following effect: #2 is the operation of the LS itself and it may be noted, in passing, that performance of its function is not an objective of a system; #6, #7 are criteria to be taken into account in following the procedures; #4, #5 are management procedures to which the LS lends aid; #9, #10 are services which the LS would render; #12 is a way in which the LS could assist enforcement of regulations; and #13 is a manner in which the LS could serve the collection of revenue. #8 announces industrial involvement; #11 is an effect which it is hoped that the LS will have; #3 is the purpose of the LS.

It is obvious that #1 is wholly mistaken. A license cannot identify anyone: physically it is a piece of paper on which are written (or recorded) certain particulars with respect to some person who may or may not exist, and who, if he/she exists, may or may not be the person presenting the license. A Master Fisherman has his identity whether or not he has a license, and a licensing system is not the only way to record the particulars of that identity. In effect, in this respect an LS is no more than a register and the information recorded in it may be false. #4, #5 also are mistaken; in themselves licenses do not have the purported effect, they are no more than paper-work record of what has been decided: determination of the number of fishermen to operate in a particular fishery is an exercise of a responsibility established by legislative action.

At the other end of the world a similar mishmash was compounded by Rettig (1985), who listed 42 objectives of license limitation (he numbered only 36 but three were really three separate items each). These objectives can be grouped under main headings:

to maintain economic viability (of fishing units and processing establishments); integrity of data; life-style objectives of fishermen; flexibility in choosing occupation;

to prevent overexploitation of fisheries stocks;

to maximize total net income (of the fishing fleets and processors); net national income; public revenues;

to minimize costs of management; annual variability of industry income; dislocation of social groups; instability due to government action;

to increase the flexibility of the fishery management process; professionalization of the fleet; the diversification of the fleet; the bargaining power of (fishermen, first buyers);

to reduce wastage of fish as discards; negative attitude of fishermen toward management agencies; user-group conflicts;

to provide for orderly fleet expansion; wise and full utilization of fisheries resources over time; a more competitive industry; reasonable economic returns; orderly fishing; an acceptable mix of individual, relative to corporate, ownership of vessels; an equitable distribution of income; opportunities for technological improvement;

to protect "our" fishermen from other groups; minority rights;

to avoid creation of special or elite status for some fishermen;

to simplify fishery management;

to achieve preferred balance of part-time versus full-time fishermen.

There can seldom have been such a panacea in the entire history of mankind. Rarely has any administrative measure been credited with such powers. Everything is there that any fishery administrator, rightly or wrongly, ever proposed to seek.

The author (or authors) or this list would undoubtedly declare that they had expected each of the propositions from which this summary has been made to be read in the form "To make a contribution to maintenance of . . ." and that he (they) had not meant to make the vast claims signified by the above presentation. However, it is by no means obvious that license limitation could contribute to each and every one of the objectives nominated. Still less can it be claimed with respect to any one of the objectives that without license limitation it would be unattainable.

There are here, clearly, some problems of systems analysis. Licensing must be seen, in true perspective, as merely one component of a program which has power only to influence, not to execute, the activities of a fishing industry. A cost/benefit study of a program component will place on the credit side an evaluation of wanted effects which can be shown to follow from operation of the component; there may, perhaps, be some effects attributable to a single component alone, but most effects are synergistic, possible only from the operation of several components. On the debit side will stand not only the directly chargeable costs, but also the price of any unfavorable effects.

Obviously, a cost/benefit study of a program component can produce valid results only if the direct and indirect effects of the component can be identified and clearly distinguished from the overall objectives of the entire program and from those of the industry. In their turn, the objectives of industry are to be examined

with respect to the entire national industry and to the particular fishery upon which the component is to be applied. And for this purpose it is advisable to work from a position which offers a clear view of the developmental status of each fishery.

Fisheries Development

Much of the complexity of fisheries administration has been generated out of the confusion that exists with regard to ownership of the resources. For the greater part of recorded history these resources, with few exceptions, were held to be *res nullius,* like birds; individual specimens became *res privata* upon being captured. Declarations that may have been made by authorities in the past, that everyone had the right to fish, might have assured a right to create *res privata* but left undetermined the question of who, by virtue of ownership, was responsible for these resources.

The appropriation of the fishery resources of particular rivers did nothing to answer that question, for it merely reserved to a few individuals the right to exploit the resource and gave them neither the knowledge nor the means of managing the resource, as a good husbandman should do; their surrogate for management was prosecution of those who trespassed.

The pressure upon natural resources over the past 150 years, brought by the growth of human populations and the advances of technology, caused concern, but prompted few remedies: fishing continued to be an adventurist occupation, attended by considerable risks, and manageable only by draconian punitive measures. The presumption was that all fishermen were hardy, independent, fiercely competitive, disdainful of authority, greedy, ill-educated and spendthrift, and that therefore their activities had to be regulated in a manner which would restrain their bad qualities, but one which, as was proven in the event, would offer little to encourage the good.

Considerable advances in the study of the biology of fishery resources were made through the first half of this century, but few changes took place in either the practice or the theory of fisheries management. The 1950s was a period of major change in fisheries, in almost every aspect. It was in this decade that the study of the dynamics of populations of fish stocks became the vogue among fishery biologists and the concept of sustainable yield gained acceptance and was seized upon by administrators: fishing, it was

agreed, should be managed with a view to obtaining the maximum sustainable yield. At the same time fishery economics raised its ugly head and sponsored the idea that fishery resources were "common property". Also in this decade, the number of international fishery bodies increased and the programs of those bodies grew considerably; international interest in the law of the sea was reawakened, and a global meeting with regard to this subject took place. Even more, Latin America staked its claim over the 100-mile wide band of littoral waters. Richardson (1985) provides a recent review of these developments.

Thus, the 1950s saw the beginnings of several important streams of thought relating to fishery resources and their exploitation. In respect of fisheries management probably the most important of these was the international current, but the idea of "common property" had a stronger, more immediate impact. Meanwhile, the idea that we should be working to achieve rational utilization of these resources remained in our minds although there was little agreement as to which plan of utilization was the most rational.

Simultaneously with developments in science and law, a tremendous ground swell of technological change arose in fishing operations and tended to frustrate the attempts to give practical effect to those new ideas. Similarly, developments in the secondary and tertiary sectors (see e.g., Connell et al. 1980), coupled with changes in consumer preferences and increases in consumer purchasing power, tended further to frustrate those developments. Thus, enlargement of fishing fleets, increases in autonomy of individual vessels and improved practices of on-board handling and storage of the catch, among other changes, had the result that all resources became accessible. In consequence, the old strategy of fishing-out one resource and then moving off to other grounds, to fish-out another resource, was no longer possible. Increase in the fishing power of fishing units had the effect of making virtually all resources vulnerable and this, combined with increased prices (a result of increased demand), meant that trust could no longer be placed in the old belief that fishing would always stop when catch rates fell to low levels, and that resources were thus shielded from overfishing.

Modes of Management

Recognition of these changes in the situation of fishery resources led administrators to seek new modes of management and generally

the result was some form of consultative arrangement in which representatives of industry were invited to express their views on regulations which administration proposed to introduce. But, not only were these arrangements markedly paternalistic in tone, they lacked direct and positive components of management, and they continued to misplace the decisionmaking and to leave unconstructed the information network.

These developments, mainly technological in character, have continued up until today, concurrently with the emergence of the UN Convention on the Law of the Sea (LOS). The striking feature of that convention, and of the great meetings that produced it, is that they all amounted to a successful public relations exercise on behalf of the principle enunciated by the South American coastal states, of holding rights over their continental shelf and the waters above it. That principle was transformed into the doctrine of the Exclusive Economic Zone (EEZ) and constitutes the most important element of a new theory of ownership of fishery resources. In effect, by claiming an EEZ a country declares that, as between nations, the fishery resources of its EEZ are no longer *res nullius*. The LOS Convention fails, however, to carry that proposition along the logical course of its development.

In the first instance, if the resources of the EEZs belong to the coastal states, those of international waters--outside the EEZs--belong to all countries and should be conserved by all countries, and their exploitation should be managed by all countries. In spite of this logical conclusion the United States (or, chiefly, the tuna lobby of that country) succeeded in having the tunas and other wide ranging species labelled (in the Convention) as "highly migratory species" and retaining for them the *res nullius* status.

Next, the Convention provides no rules for management of exploitation of shared resources, neither for those that inhabit only coastal waters, nor for those that pass part of their life in national waters and part in international waters.

What the LOS convention does with regard to the EEZ is to specify the rights and obligations of the coastal state as, in effect, owner of the fishery resources of that zone. Thus, in international sense these resources cease to be *res nullius* and also cannot be held to be "common property". The same effect should hold also in national sense; that is, these resources are national property and management of their exploitation should be in accordance with current practices with regard to such property, which, be it noted do not include

anything with reference to "common property". At this point it is advisable to halt for the purpose of disposing of the term "common property". No legal dictionary which I have been able to consult carries this term. It is a neologism thought by its inventor to denote resources belonging to everybody and, therefore, whose exploitation was open to everyone. Very soon after its introduction it became burdened with connotations derived from some vague, and generally sentimental ideas about the "common" of english villenage although in no sense whatsoever do fishery resources in this century conform to the principles by which pastures, woods and fisheries in the past were common. That burden of inaccurate connotation was then colored by the effect of Hardin's (1968) "Tragedy of the Commons". All this gave credence to the paternalism of modern fisheries administration, which says, in effect: "here we have valuable and vulnerable resources exposed to the depredations of greedy and irresponsible professional fishermen--send out the gamekeepers". Encouragement of this attitude, if it were needed, was and is given by sportfishing groups, and the attitude itself is taken to be evidence in affirmation of the common property nature of these resources. But if, as I argue, "common property" is false doctrine, a rethinking of administrative practice is indicated. The question then is: where should we look for alternatives? The suggestion offered here is: in the information system of the industry.

Decision Function in Fisheries

A major characteristic of good agriculture and animal husbandry is that decisions are made by individuals who are closely associated with land and stock, by individuals with intimate knowledge of the systems they manage and with direct and immediate information on the state of each system. Moreover, decisions are made by individuals with a sense of responsibility for and direct personal interest in the maintenance of those systems. In fisheries the individuals who make the operational decisions (when and where to fish and what to take) are in various ways separated from the systems that provide information with regard to the resource, and in general they receive such information late, after the occasion when use of it could have influenced their decisions. Moreover, some part of the options that should be open to them is closed by regulation and this loss of freedom of action has the effect of

making them feel that responsibility for their activities lies not with them but with some remote fishery authority.

It is a mistake to believe that all fishermen are always and invariably uneducated, greedy, and irresponsible. Paternalistic management-by-policing, based on that belief, should be replaced by arrangements which acknowledge the skills and legitimate aspirations of the current generations of fishermen. I believe that the trend should be to transfer to fishermen responsibility for ensuring that exploitation of each resource is efficient in both economic and conservational senses. To this end they should each have a legally defined and protected right to take a proportion of each year's catch, and collectively they should have the means to ascertain what is available each year, and the right to participate in the determination of the catch to be taken. The right should be of the nature of a *profit a prendre* (a right to harvest), so that in effect each working fisherman would have a legal instrument setting out the obligations of both parties. For any one resource or fishing ground, the sum of the proportions, as decimals, must, of course, be one; the state's obligation would be to protect each proportion. The fishermen would be obliged to keep records, maintain a monitoring system and, as necessary, carry out or arrange for the conduct of such research as might be necessary.

Fisheries administration should be reformed by proper assignment of rights and abandonment of the practice of making operational decisions for fishermen. For their part fishermen must be able to conduct their operations in conformity with the responsibilities placed upon them. The first requirement is that accurate records be kept by every fisherman, in such detail as may be needed by the monitoring system. It is perhaps not over-optimistic to believe that before long each fishing boat will carry a black box, similar in principles to the black box carried by aircraft, in which required information will be stored, the greater part of it automatically. With comprehensive, accurate, and real-time reporting, each fishery will be monitored by its fishermen themselves, or on their behalf. The product of that system will be real-time information on the state of the resource; this information will pass to the fishermen, and be taken into account in making operational decisions. Because the information will be real-time, fishermen will be able to interpret it in terms of the current experience and thus will be able to identify more accurately the matters upon which they require more information--sometimes to be obtained by formally organized research.

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Manuscript received 22 September 1987; accepted 10 February 1988