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PART 4

Review of Possible Conservation Actions for the ICNAF Area[1]

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Terms of Reference

The ICNAF Commissioners in their third meeting at Hamburg on 4 June 1964 requested:

> "that the Chairman of Research and Statistics and of the Assessment Subcommittee review in general terms the various kinds of action which might be taken by the Commission for the purpose of maintaining the stocks of fish in the ICNAF area at a level at which they can provide maximum sustained yields. In so doing, special reference should be made to the provisions contained in Article VIII of the Convention and their probable effects on the stocks and fisheries. Their report should be sent via the Executive Secretary to the Chairman of the Commission by 31 December 1964 and circulated to all member countries not later than 31 January 1965."
> (1964 Annual Proceedings, Vol. 14, p. 18)

The action needed is of several kinds: research action to provide the kind of information needed by the Research and Statistics Committee to provide advice to the Commission, and legislation and action to control fishing and catch at the recommended level.

So far as this report is concerned little is said about the research action needed, because this is kept under active consideration by the Research and Statistics Committee, and the urgent need is to consider future legislative and control action. However it should be pointed out that the research information needed is not fixed, but depends on the precision and complexity of the conservation measures. Thus, simple statistics of catch and effort may be sufficient to show that fishing is having a significant effect; additional information on the size composition of the catches and on mesh selectivity may show that a larger mesh would increase catches. Much more data on feeding, growth, etc., may be needed when, for instance, possible interactions of fisheries for different species are being considered.

A. Aims of Conservation

A. 1. Introduction. The aim of ICNAF as given at the beginning of the text of the Convention is "to make possible the maintenance of a maximum sustained catch from (the ICNAF) fisheries."

How this maximum is defined is not specified; the most common interpretation is that the objective is for maximum yield in weight of fish, separately from each stock of fish. It will be suggested later in this report that such an interpretation gives rise to difficulties and contradictions in situations that are at all complex, though it does provide a good objective in the simpler situations, as described in the following section.

Any conservation or management measure consists of restricting present catching operations in some way in order to ensure better catches in the future, either by allowing the fish to grow to a better size, or by maintaining an adequate breeding stock, or both. So far as the effect on the stock is concerned conservation measures can be placed into two groups: those restricting the fishing on all sizes of fish (that is, in technical language reducing the fishing mortality), and those restricting, and possibly even eliminating the fishing on certain groups of fish. The latter may include restriction of fishing at certain times or places (e.g. after spawning) when the fish are in poor condition, so that the weight, and more particularly the value of the individual fish are low, but the small fish are the group most frequently given special protection (e.g. by mesh regulation).

The effects of management measures can therefore be described by two basic relationships,

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one relating the yield to the total amount of fishing (or more strictly the fishing mortality caused), and the other relating yield to the size (or age) at which the fish is first exposed to the full fishing mortality) i.e. the size, or age, at first capture). Examples of the curves relating yield and effort have been already given in the 1964 Report of the Assessment Subcommittee (ICNAF Redbook 1964 Part I, Appendix VII, Fig. 3); examples of the relation between yield and size of first capture are given in the 1961 Report of the Assessment Working Group (Supplement to 1961 ICNAF Annual Proceedings, Vol. 11).

The theoretical methods by which these curves are calculated have been fully described elsewhere (Beverton and Holt, 1957)[4]. They depend on knowing the numbers of recruits entering the fishable life-span, their growth pattern and their death rates. Because the number of recruits often varies widely, the calcultations are usually made in terms of an average number of recruits. If fishing has no effect on recruitment, either directly or through changes in the adult stock, then changes in recruitment will not alter the shape of the curves, though they will alter the absolute magnitude of the yield. That is, the strategy giving the maximum yield for the average recruitment will also (at least very closely) give the maximum yield (in terms of weight, though possibly not in economic yield) from any other recruitment.

In most fisheries, therefore, where there are fluctuations in recruitment or other factors, independent of the amount of fishing, it is difficult to predict what the absolute magnitude of the catch would be with any pattern of fishing, or to say that the catch in any particular year following some regulation (e.g. an increase of mesh size) will necessarily be greater than before the regulation. What is possible is to determine that catches following some regulation will be greater than they would have been if the regulation had not been introduced. Thus, it may be difficult to determine as an absolute quantity, a maximum sustainable yield for a stock, but it may be possible to determine that a certain strategy (combination of amount of fishing and size at first capture) will give a greater yield than any other strategy.

If recruitment decreases with decreasing stock, then the shape of the curves will alter, being lower at high levels of effort, or at low sizes of first capture. Thus, they will have more pronounced maxima, and these maxima will occur at lower effort values or higher values of size at first capture. Because of the considerable difficulties in determining the true relation between stock and recruitment, the yield curves are calculated, at least initially, in terms of constant recruitment. If there is a relation between stock and recruitment these constant-recruitment curves will give over-estimates of the desirable level of effort, and under-estimates of the desirable mesh size.

These relationships between yield and effort. and between yield and size of first capture, are interdependent, so that there is a whole range of curves relating catch to fishing effort, depending on the size and age at first capture (and also possibly on variations if any of fishing mortality with age above the age at first captures). Similarly the relation between catch and size at first capture depends on the amount of fishing. The general form of the two sets of curves is shown in Fig. 1 and 2.

A. 2. Catch and size at first capture. Figure 1 shows the relation between catch and size at first capture (expressed as a percentage of the largest size to which a fish can grow), for both a moderate level of fishing (curve **a**), and very heavy fishing (curve **b**) (moderate fishing, but with recruitment reduced at low levels of stock, may also give a curve similar to **b**). Though theroretically the curves can be drawn over the whole range of possible sizes, in practice, because of differences in behaviour and distribution of the smallest fish, they cannot be caught in quantities, and there is a lower limit to the possible effective size at first capture (as shown by the broken part of the lines).

As each of the curves represents changes in catch at a fixed level of fishing, the curves of catch per unit effort against size at first capture will be exactly the same. In particular the maximum of each curve represents both the maximum catch and the maximum catch per unit effort. Therefore, at least so far as the particular individual stock is concerned, that point is by any reasonable criterion the 'best'.

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[4]Beverton, R. J. H. and S. J. Holt. "On the Dynamics of Exploited Fish Populations." London: HMSO. 1957.

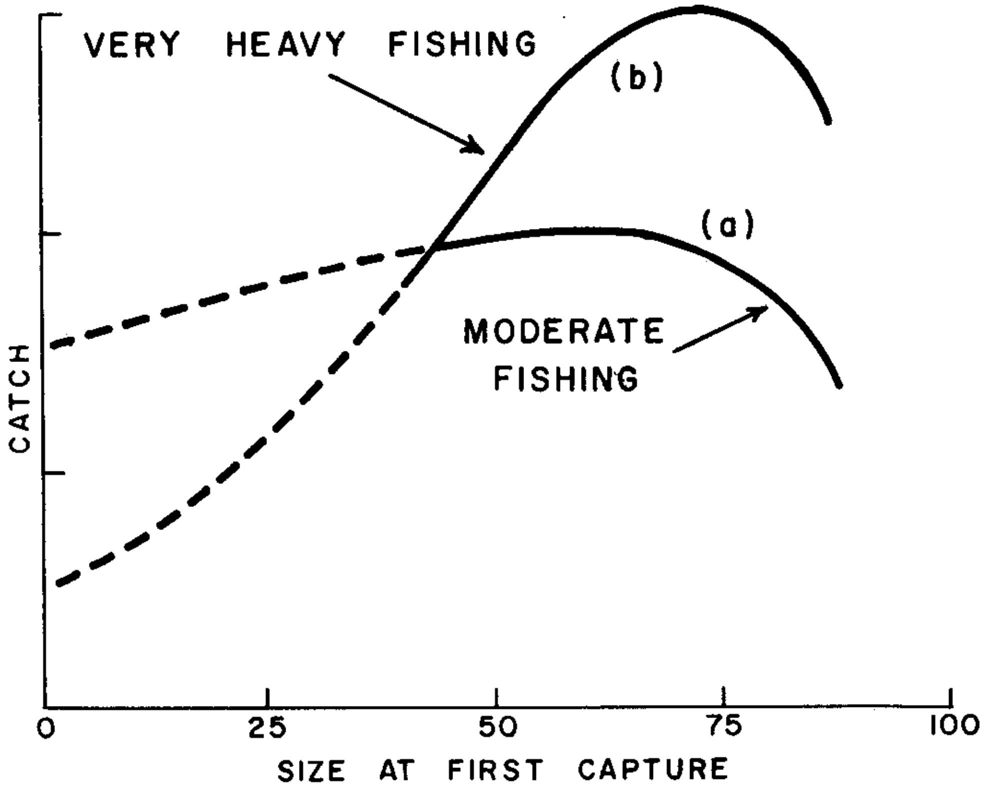

Fig. 1. The relation between total catch and the size of first capture, at two levels of fishing effort.

The comparison of the two curves in Fig. 1 (for moderate and heavy fishing) shows that the following occur with an increased amount of fishing:

(i) The maximum catch occurs at a larger size at first capture;
(ii) The absolute quantity of the catch at the maximum is greater;
(iii) The relative difference between the catch with a large mesh and that with any smaller mesh (i.e. the benefit from a larger mesh) is greater.

These facts have already been pointed out in the 1961 Report of the Assessment Working Group (Supplement to the 1961 ICNAF Annual Proceedings, Vol. 11, Section 11); they are particularly relevant to that report, as it was made at the beginning of a period of expansion of fishing, and the calculation of the expected benefist of larger meshes presented in that report probably underestimates the need for, and benefit from, larger mesh sizes under present conditions.

A. 3. Catch and fishing effort. Figure 2 shows the relation between catch and fishing effort and Fig. 3 the relation between catch per unit effort and effort, in both cases for curve (**a**), small size at first capture (small mesh size) and curve (**b**), large size at first capture (large mesh size). This fishing effort is defined in the biological sense; it is, or should be, proportional to the fishing mortality caused, and includes all the relevant corrections to the basic effort statistics for changes in fishing power, searching tactics, etc. It will differ from the basic statistics of fishing effort, e.g. hours fishing, if there are any changes in the efficiency of the fleet.

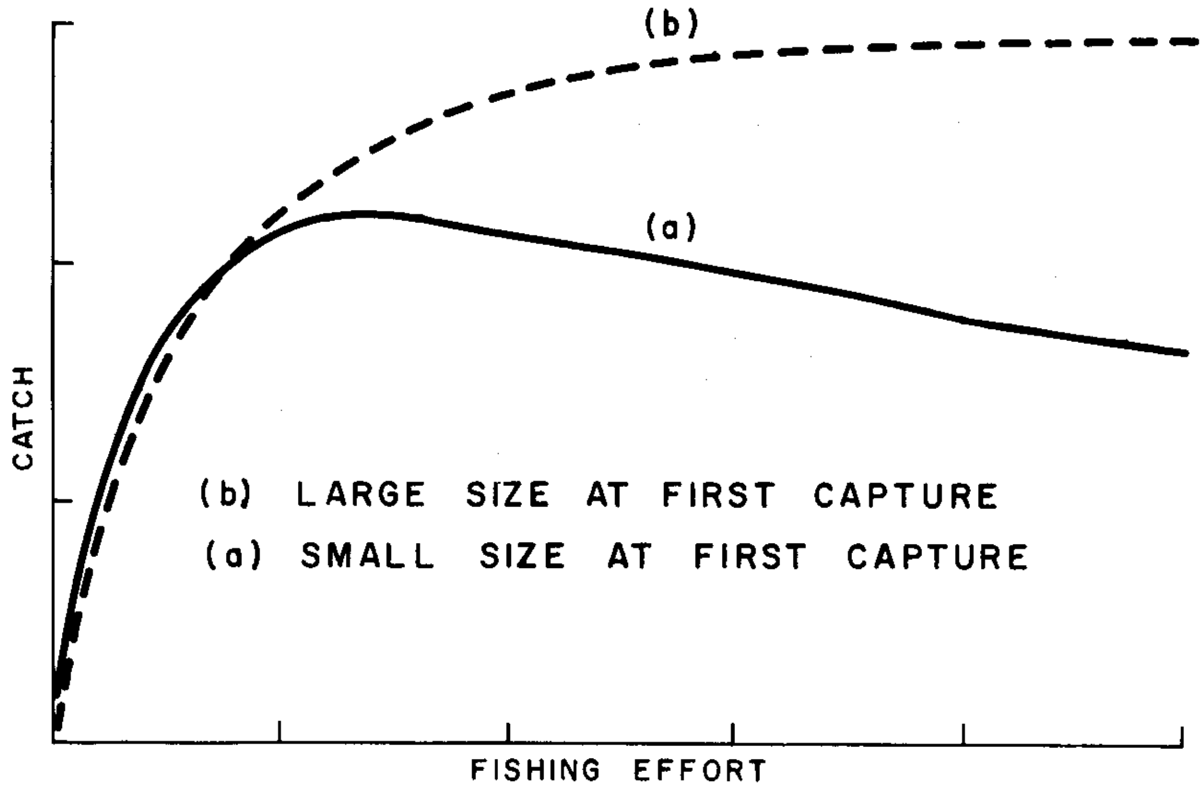

Fig. 2. The relation between total catch and the fishing effort at two sizes at first capture (mesh sizes).

In these curves there is a difference between the changes in the total catch (Fig. 2) and the changes in catch per unit effort (the return to the individual fisherman or fishing vessel, Fig. 3). The catch per unit effort starts to decline when fishing begins and continues to decline with increase in fishing effort. The total catch, however, increases at first with increasing fishing; with a small size at first capture (e.g. a small mesh size) it may soon reach a maximum, but at larger sizes the maximum occurs at an increasingly higher level of fishing or may even not occur at all; for example, for most herring stocks, which are usually not fished until the herring are relatively large, there is no maximum in the yield-effort curve, unless recruitment is affected. Thus, the maximum of curve (**b**) in Fig. 2 occurs outside the range of values in the diagram. Clearly any position to the right of the maximum is undesirable, as, compared with the maximum, there is a loss on both total catch and catch per unit effort. However, a point a little to the left of the maximum, which gives a total catch very little less than the maximum, but with a reduced effort and increased catch per unit effort, may be more attractive to the fishermen than the point giving the maximum yield in weight.

Besides considering the simple effects of changes in effort for constant size at first capture, or changes in size at first capture for constant effort, the effects of simultaneous changes in both should also be considered. A full presentation of all possible such changes would require a three-dimensional diagram, but in fact there is one combination that is particularly important. This is the relation between catch and effort when the size at first capture at any given level of effort is adjusted to give the maximum catch for that effort. This curve, often called the eumetric fishing curve, is important because, as shown above, the use of the optimum size at first capture maximises both catch and catch per unit effort, and, therefore, whatever effort level is desirable, the optimum size for that effort level should be used if at all practicable. The form of the eumetric curve, as a plot of catch against effort, is likely to be similar to that for a fairly large size at first capture or possibly flatter, with the maximum occurring at a very high level

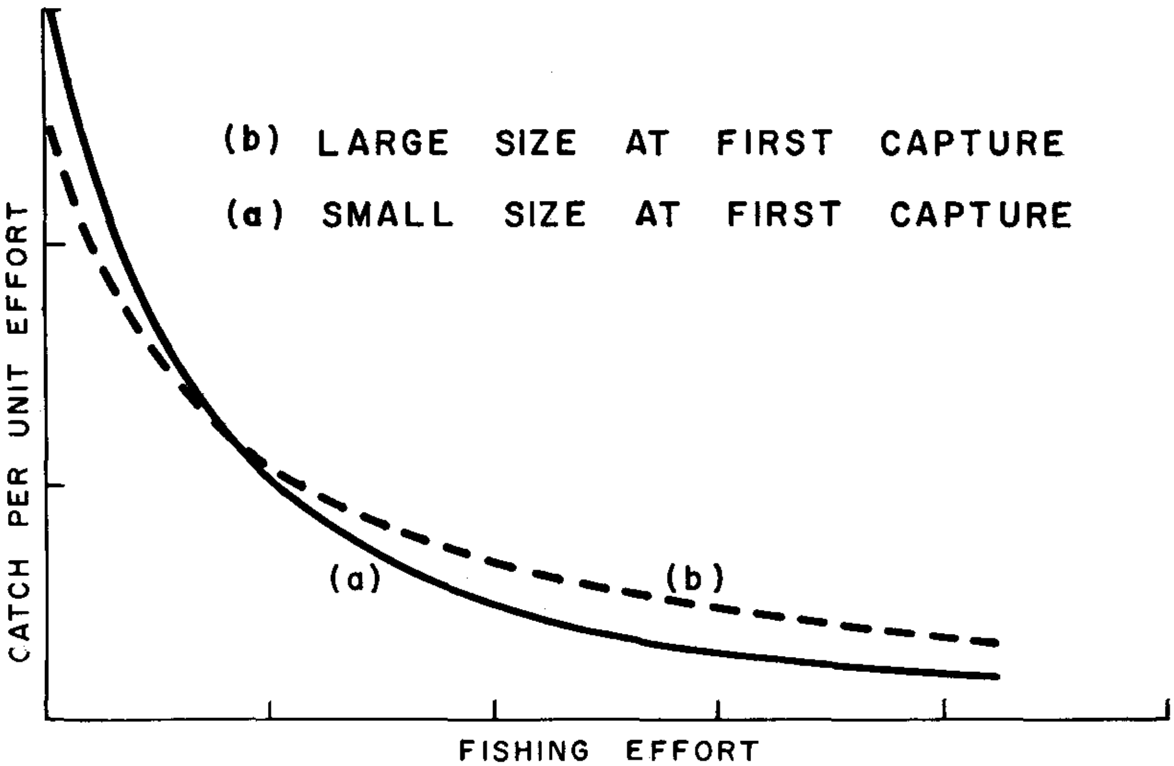

Fig. 3. The relation between catch per unit effort and the fishing effort at two sizes at first capture (mesh sizes).

of effort, or even, theoretically, at infinite effort. The curve may, however, have a clear maximum at a moderate level of effort if recruitment is decreased by decreasing the stock.

If a stock can be considered in isolation, and if there is a maximum in the yield-effort curve at a moderate level of effort — either because there is such a maximum in the eumetric curve, or because the size of first capture is relatively small and cannot be altered — then such a maximum provides a precisely definable objective of management.

Even when considering a single stock the concept of the absolute maximum yield in weight becomes less useful if the maximum can be obtained only with a large, or theoretically infinite, amount of fishing. Then, a level of effort much less than that giving the maximum yield will give a yield only a little less than the maximum; expressed in another way the increase in yield resulting from a given increase in effort becomes small and even negligible as the maximum is approached. This is in fact always true, wherever the maximum occurs, but the disproportionate effort involved in obtaining the last few per cent of the absolute maximum yield, and the contrast between economics and the concept of maximum yield, is most obvious when the yield-effort curve is flat. Thus, if the curve has a sharp maximum, it may be economically more attractive to fish at, say, 98% of the effort giving the maximum yield, and get, say, 99.5% of the maximum which in practice is the same as fishing at the maximum — but if the curve is flat, then an economically desirable position might be to fish at 50% of the maximum effort, and take 90% of the maximum yield.

Another difficulty involved in aiming at the absolute maximum yield from a single stock is that the stock abundance and catch per unit effort will be less, and possibly appreciably less, at the effort level giving the maximum yield than at the lower effort levels giving the best economic returns. This difference is greatest when the maximum occurs at a high effort level. In the preceding examples, the stock levels at the alternative levels of effort are respectively about 2% and 80% above the stock levels at the maximum.

A. 4. More than one stock. The consideration of maximum yield in weight from each single stock as the only objective of management becomes much more difficult when two or more stocks have to be considered together. For instance, particularly in the southern part of the Commission's area, trawling with small meshes for unregulated species is developing; inevitably these trawls catch quantities of small fish of the regulated ICNAF species. Clearly the maximum yield of haddock can be taken only if the small-mesh trawling is stopped, but the maximum yield of the smaller unregulated species can be taken only if small-mesh trawling is intense. This clash of interests requires consideration of the combined yield from all stocks and implies the use of a common measure. If the prices are very different, value is likely to be a more meaningful measure than weight. The existing 10% exemption rules for redfish and other small mesh trawling presently in effect indicate that the Commission has already taken into account total yield and recognized that the maximum yield of regulated species, considered individually, is not a reasonable objective.

When more than one stock, not necessarily of different species, is considered, the additional effort used in obtaining the last few per cent of the maximum yield from one of the stocks is more than just an economic waste. If there is any alternative stock which is not heavily fished, i.e., one for which an increase in effort will give a commensurate increase in yield, then it is desirable, in terms of both economic return, and total yield in weight, that the 'wasted' effort should be diverted to the alternative stock.

The same thing occurs when the effort is being reduced so as to reach the level giving the optimum yield. If this reduction is made without altering the efficiency of the fishing operation, there will be a saving in the cost of fishing, which may appear as reduced costs or increased profits. A surplus effort (in the form of men, ships and money) may be diverted to under-exploited stocks, thus increasing the total yield. Alternatively, if the efficiency is reduced, then the costs of fishing will remain much the same, and the benefit will only be in the increased yield from the protected stock — there will be no benefit in the form of reduced costs or in the form of increased yield from the alternative stocks.

The possible economic benefits of efficient management may be illustrated by using a typical yield-effort curve with a clear maximum at a moderate effort level (that is, a situation where the principle of maximum yield presents fewest problems). For a first approximation, the cost of fishing, assuming the efficiency of operations is unchanged, is proportional to the fishing effort, and the value of the output, assuming prices are unaffected, is proportional to the yield in weight. In Fig. 4, if an over-fished situation A is taken to be one in which costs equal value, then the line OA represents the line of equal costs and value. If fishing effort is reduced, without changing efficiency, to the level of effort giving the maximum yield (C_2) then the value of the yield will exceed the cost of catching it by an amount A_2C_2, of which about two-thirds (A_2B_2) represents reduction in cost, and one-third (B_2C_2) increased value. A greater excess of value (A_1C_1) over costs would be achieved, at a still lower level of effort, when most of the gain (A_1B_1) is due to reduction of costs, but also some (B_1C_1) to increased value. The important point is that even when the objective is simply to reach the maximum yield, the possible benefits that may be obtained are likely to be as much or more in the form of reduced costs, as in that of increased yield. Because so much of the benefit may be in economic terms, and because some of the problems arising in conservation, whatever the objective, are likely to be economic ones, it seems desirable that the Commission should be enabled to seek economic advice, just as at present it has available statistical, biological and oceanographic advice.

B. Methods of Conservation

B. 1. Introduction. In Article VIII(1) of the International Convention for the Northwest Atlantic Fisheries, five conservation measures are listed. These are:

(a) establishing open and closed seasons;

(b) closing to fishing such portions of a subarea as the Panel concerned finds to be a spawning area or to be populated by small or immature fish;

(c) establishing size limits for any species;

(d) prescribing the fishing gear and appliances the use of which is prohibited;

(e) prescribing an over-all catch limit for any species of fish.

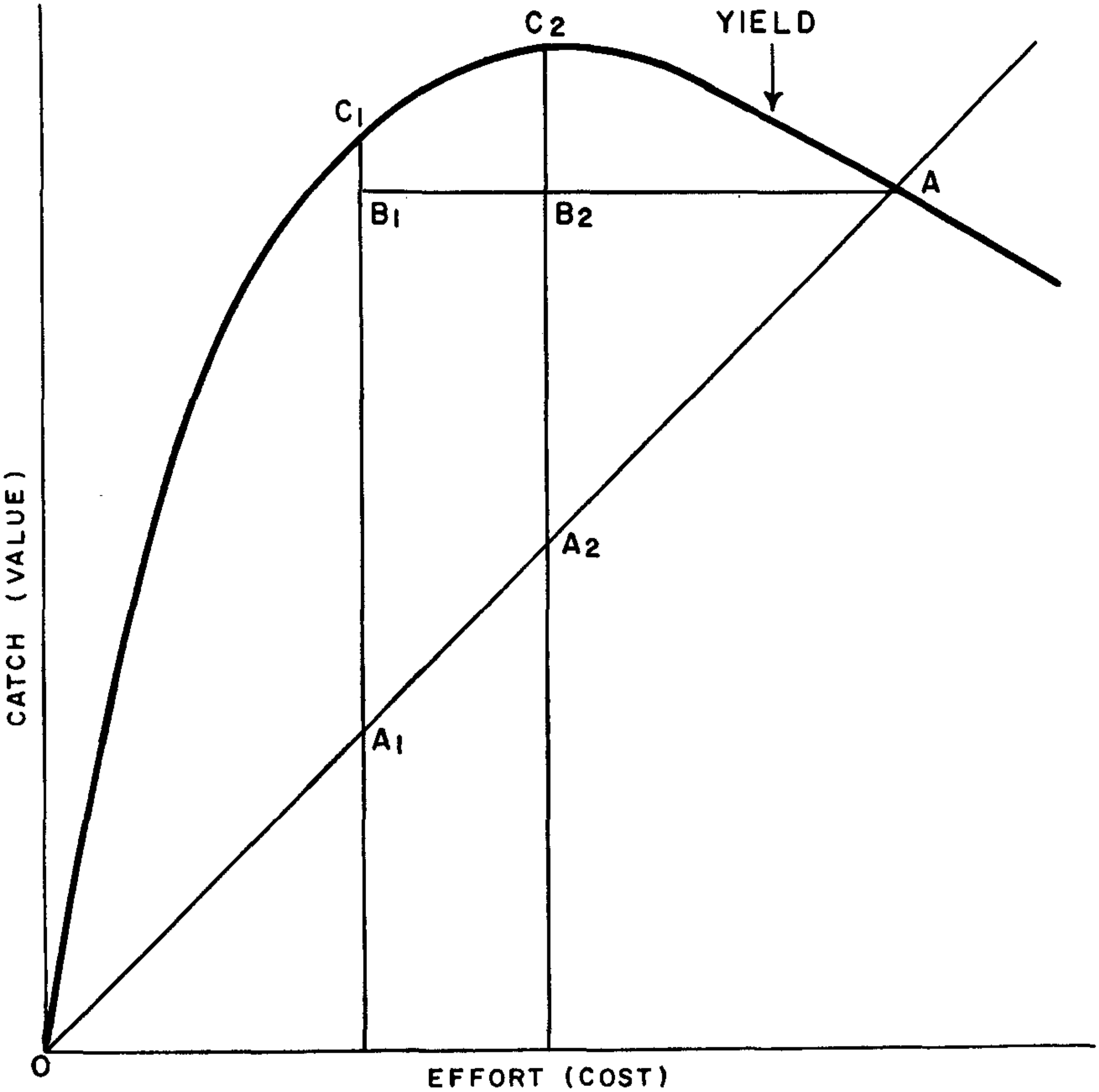

Fig. 4. The effect on yield and on the difference between value of the catch, and cost of fishing, of changes in the total fishing effort.

So far as the effects on the stock and future catches are concerned these measures can be classed according to whether they affect the sizes of fish caught, or the total fishing effort. The usefulness of regulations, particularly those affecting fishing effort, will be reduced if they seriously affect the efficiency of fishing (cost of unit fishing effort).

B. 2. Protection of spawning fish. For most fish stocks there is no very good evidence about the precise relation between the adult stock and the number of recruits produced. For some, e.g. the North Sea plaice, it is known that as the stock decreases (e.g. due to increased fishing), there is an improvement in the survival of eggs or young stages that almost exactly balances the reduction in the total number of eggs laid, and the number of recruits changes little if at all. A similar constancy of recruitment is believed to hold for many other stocks, though for some there is evidence that recruitment is reduced if the adult stock decreases.

For those stocks where the number of young recruits is independent of the number of adults (over the range of adult stocks likely in practice) there is no need for specific protection of spawning fish. For most ICNAF stocks it is not yet known to what degree, if any, the production of recruits is affected by reduction of the number of eggs produced by the spawning populations, so that the maintenance of a sufficient spawning stock may be necessary.

If a sufficient spawning stock has to be maintained, this can only be done by adequate protection of the fish during their whole life. In many ICNAF stocks fishing on the immature part of the stock is increasing, and therefore the spawning stock could be sufficiently reduced to affect the number of recruits produced even though there was no fishing on the spawning stock. In such fisheries protection of the spawning fish is not a sufficient measure. Also prespawning and spawning fish are usually in large concentrations, and readily available to the fisherman, so that fishing at this time is likely to be most efficient (unless at this time the fish are in poor condition).

B. 3. Protection of small fish. This may be, to a greater or lesser degree, achieved by measures (b) closure of certain areas, (c) size limits, and (d) prohibiting certain types of gear — in particular mesh regulation of trawls.

Closure of areas primarily inhabited by small or immature fish is only feasible in the limited number of stocks for which reasonably well defined nursery grounds exist. For such stocks, especially when productive alternative grounds containing larger fish are available, such closures provide a method of protection of small fish which causes little disruption of fishing practice, and is a valuable method of conservation. Unfortunately, there are few easily defined nursery areas for the major ICNAF stocks.

The question of size limits for fish has been discussed by the Working Group on Fisheries Assessment (Supplement to the 1961 ICNAF Annual Proceedings, Vol. 11, p. 76). Where mesh regulations are in force, unless the size limit was placed near the lower part of the selection range, there would be so much wastage that the long-term gain would be reduced. If the limit were high in the selection range loss in discarded fish might well outweigh the gain to be expected from the legal mesh. If mesh regulations did not exist and a size limit were imposed it would not be possible to predict how the fishermen would adapt their mesh to the size limit and what the wastage would be.

There are now so many factory vessels and part-processing vessels with meal plants, and salting vessels engaging in the fisheries that size limits are impractical for the international fisheries in the ICNAF area.

The various aspects of mesh regulation have been well described in the Report of the Assessment Group (Supplement to the 1961 ICNAF Annual Proceedings, Vol. 11). Little need be added to this except to reiterate that the result of increasing fishing effort is to make the need for, and effect of, mesh regulation that much greater. However, by itself mesh regulation cannot do much to mitigate the effects of increasing effort.

B. 4. Control of fishing effort. Fishing effort may be controlled by measures (a) closed seasons, (d) limitation of types of gear, or (e) catch limit. Limitation of the type of gear is, however, effective in limiting effort to the extent that it reduces the efficiency of the gear, and hence increases the cost of exerting a standard unit of effort. Such a measure, therefore, can produce only that part of the benefit possible from restricting effort which comes from increased catch from the regulated stock, but not that part due to the reduced cost of taking that catch, or to the greater catch from some alternative stock.

Catch quotas and closed seasons are to some extent the same, particularly if the quotas are not allocated. In that case presumably fishing will be unrestricted until the quota is reached, and then fishing ceases, i.e., there is a closed season, the length of season being dependent on the amount of fishing. This method has been used for both the Pacific halibut and Antarctic whales. For the Pacific halibut the regulation was successful in reducing the effort to the desired level, but for the Antarctic whales the initial quota was set a little too high, and the subsequent inability of the International Whaling Commission to reduce the quota to the level suggested by the later scientific findings has led to reduction in landings and a prospective collapse of the industry.

For both fisheries, as the regulation became effective in restricting the total effort, the competition between ships to maximize their individual shares of the total quota became intense and the season became shorter and shorter, thus dissipating much of the benefits in inefficient operations (particularly in the whaling industry where there was no alternative employment for the ships concerned). For the whales this problem was solved by allocating the total quota among countries, though this was done outside the Commission.

The events in these two fisheries point to two difficulties that are likely to arise whenever catch quotas are used. The first is that the objective of regulation is to achieve a particular level of the fishing mortality, i.e. fishing effort, but the effort exerted to catch a given quota depends on the stock abundance. There must therefore be a quick and simple procedure for adjusting catch quotas, corresponding to observed or predicted changes in stock, e.g. year-classes of unusual strength entering the fishery or depletion of the stocks by too high a quota in the previous season. Similar adjustments would have to be made to the length of open season to correct any over-optimistic estimates of the desired length of season, though not to allow for changes in year-class strength.

Secondly, as regulation becomes successful and stocks increase, more vessels are likely to enter the fishery and, to keep the effort at the proper level, the season becomes shorter — from 268 days to 24 days on one ground of the Pacific halibut. Thus, unless entry of vessels to the fishery is controlled, quota regulation tends to be wasteful of the capital invested in the fishery. Such waste may be reduced if there is an allocation of separate catch quotas to sections of the fishery within which competition may be less.

For closed seasons there are particular difficulties in a complex area such as ICNAF. Each major stock must have its separate season, and if these are consecutive then the mobile part of the total effort (i.e. freezer trawlers, salting vessels) could concentrate in turn on each stock, thus maintaining the high level of effort. If the seasons are simultaneous then during the closed season the most mobile vessels may be able to continue fishing elsewhere, for instance outside the ICNAF area, while other vessels, e.g. the inshore fleets, may have no alternative employment.

A similar inequity may occur with quotas. For many stocks there are different seasonal fisheries, e.g. an offshore winter-spring fishery, and an inshore summer fishery. If a single quota is set for the year, one or other of these seasonal fisheries will have a big advantage, depending on the date from which the quota year is calculated, e.g. if it is 1 January, the winter-spring fishery might be virtually unrestricted. Again these difficulties may be reduced by dividing the total quota among sections of the fishery or among countries. Then difficulties of an allocation between countries with a long and stable fishery in the ICNAF area and those whose fisheries in the area are developing are obvious.

The origin of these and most other problems of conservation is that when the stocks are in their optimum condition, the value of the catch is greater, and possibly very much greater, than the total cost of catching it. In an unregulated fishery this potential surplus is dissipated by "overfishing" — the effort (and hence cost) increasing unrestrictedly and the catch increasing very slowly or even decreasing. In a regulated fishery it is likely that the surplus will be dissipated by making, directly or indirectly, the fishing effort more and more inefficient. This is almost certain to happen unless there is a deliberate decision as to how the surplus should be obtained — as cheaper fish, better conditions for fishermen, or even as a direct contribution to the national treasury. For instance it has been suggested that the whale stocks should be owned and managed by a UN agency, not only because such a body could ensure rational management of the whale stocks but also because it would be a body which could well use the potential $100 million per year net income which could ultimately be taken from the Antarctic whale stock (the possible gross annual catch has been estimated to be worth $200 million).

In the ICNAF area different countries are likely to wish to use the potential surplus in different ways; this would be possible with the total quota divided nationally.

C. Application of Conservation

Recent events in the International Whaling Commission are very relevant to the general problems of putting conservation measures into operation. Some years ago the scientists pointed out that stocks of whales in the Antarctic were becoming depleted. No effective action was taken because it was felt that the scientists (who were not in complete agreement, at least in detail) could be mistaken. More recently, the decline in stocks became only too clear, and it was shown that only very drastic limitation in catches could halt the decline and allow the stocks to build up. Again there was no effective action because, it was claimed, the economic state of the industry was already too precarious. It now seems probable that the next few years will see still further reduction in Antarctic whaling.

The first lesson of general interest is that action may have to be taken before absolute certainty in understanding the state of the stocks is reached, otherwise events may have gone too far — though fortunately, because of their different reproductive powers, the collapse of fish stocks is likely to be much slower and less catastrophic than the collapse of the whale stocks.

Second, and more important, is that there is rarely any such thing as painless conservation, and nearly always some immediate sacrifice has to be made to achieve the long term gain. If this immediate loss is small, e.g. for some mesh changes, there may be no particular problem. More often the immediate loss may be appreciable, and unacceptable to the sections of the fishing industry concerned with the immediate future (ensuring this year's profit, or fulfilling this year's plan). If these sections have undue influence in national delegations to Commissions, little progress may be possible — on the east side of the Atlantic an increase of mesh size in at least one area has proved impossible, despite the clear case for such an increase, for this sort of reason. To achieve good conservation, Commissions, and more particularly national delegations, must be prepared to over-ride short-term sectional interests, either with firm enforcement of unpopular measures, or by suitable interim compensation to make the measures attractive. Otherwise, it will be difficult or impossible to ensure a productive and profitable fishery.

Another problem is that the losses and gains will not be equal for all sections of the fishery — an obvious example is that a hook and line fishery will suffer no immediate loss, but only a gain, from an increase in trawl mesh. If the differences are small then the inequalities may be acceptable, but otherwise a decision may have to be made as to some form of compensation.

To summarize, in most ICNAF stocks the amount of fishing is at present expanding. Inevitably this expansion must reduce the stocks and reduce the catch per unit effort. For many if not most of the stocks of major importance the amount of fishing has now reached a level such that further increase in fishing will bring little or no increase in catch, and may even reduce the catch. Some increase in catch may be obtained by protecting the small fish and allowing them to grow (e.g. by using a large mesh size) but if this is followed by further expansion of fishing, then the present situation of increased fishing giving reduced stock, and little or no increase in catch, will be repeated.

There must therefore be some direct control of the amount of fishing. All methods of doing this raise difficulties, but that presenting least difficulties is by means of catch quotas. There must be separate quotas for each stock of fish, e.g. for cod at West Greenland, and preferably be allocated separately to each section of the industry.