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Fishery Administrators' Problems

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There has never been, to the writer's knowledge, a definition of exactly what a fishery administrator is. True, fishery administrators are frequently described, but generally by some snappy adjectives which go far back into their ancestry. A description lacks the value of a more precise definition, however, and in the absence of an authoritative definition of the species, an attempt will be made to provide one: A fishery administrator is a citizen who is expected to start with an indefinite, indeterminate number of unknown variable natural factors, including the factors of human nature, and without the benefit of any recognizable formula or recipe, add these elements together to produce a constant, stable, unfailling, maximum supply of catchable, marketable, or profitable fish or shellfish. If it is thought that this definition involves some exaggeration, let us analyze the situation.

We will start with the ingredients that the administrator has to work with in trying to get results. His raw material is the existing seed stock comprising the present fish and shellfish populations in natural waters. He does not know what these are, where they are located, or how many of them there are. Of course, he has hints and clues to these factors, but these hints and clues are subject to year-to-year, month-to-month, and even week-to-week changes brought about by the whims of Nature, the intensity of fishing, etc. For example;

What is the distribution by species, quantitatively, seasonally, by size, and geographically, of shrimp in the Gulf of Mexico or South Atlantic waters? This ought to be easy since shrimp have been a No. 1 crop in these areas for a long time, and sound administration of the shrimp resource should certainly be based upon a precise knowledge of these factors. Who can, or will, supply the details just mentioned? Or, again, how many shad should be allowed to spawn in any given river in comparison with the number netted and shipped to market? Does the catching of undersized fish—trash fish, if you will—actually deplete stocks or does it simply weed out a natural excess or surplus which would never grow to maturity anyway? What makes the spawning of mullet so much more successful in certain years than in others, or, to put it differently, why do recurrent variations in the size of year classes of almost every species of fish exist? In brief, how are things in the Gulf stream and every other square mile of water on our coast?

The questions are not theoretical or academic. They are matters which every fishery administrator is called upon to consider. To repeat: the fishery admin-

istrator starts his functioning with a background of a vast, unorganized ignorance, illuminated by occasional flashes of traditional legend, hearsay, inference, assumption, guesswork, and, praise be, an increasing backlog of scientific theory and fact coupled with the experience gained from trial and error. The administrator, having no firmly fixed starting point of fact, must then chart some sort of a course in the hope of arriving at the only definite landmark in his harassed existence—that represented by a stable, sound, productive fishery. This part of the job, nevertheless, might be considered relatively simple, calling for nothing more than a system of Spartan, conservative restraint and restriction upon the taking of fish. By always leaning over backward in regulating, giving the resource the benefit of the doubt, it might be possible to come up with reasonable assurance of protecting the resource, except that the economic survival of thousands of individuals, hundreds of communities, and dozens of counties, may be affected by the administrative action taken.

Thus, the problem immediately becomes one of balancing the inherent—and unknown—productive capacity of the fishery against the economic needs of the fishermen and related enterprises, and against the political demands which arise out of these needs. This human factor is probably the trickiest element in the whole baffling, complex cross-fire which characterizes our present efforts at fisheries administration and management. In fact, this brief highlighting of the problems which face the administrator has already made the writer so sorry for the poor wretch that is hard to go on, but we certainly owe it to him to straighten out his troubles if we can.

The whole situation is too complicated for us to try to take time to work out all of the ramifications. However, because of the nature and character of this conference here at Miami, we can profitably cast a glance at one aspect of the problem—that of fact-finding or research. Many here may be ready to deny indignantly that there is any such shortage of basic information as has been indicated above. Actually, there is a lot of piecemeal, fragmentary information which has been laid before the administrator, like a half or a quarter of the total number of pieces in a jig-saw puzzle. He can put these together, filling in the missing pieces as best he can, and trust that the picture revealed is something approximating Nature's own design.

He *can* do this; sometimes he doesn't even try because he, or those he serves, may be inherently distrustful of scientific data as contrasted to so-called practical knowledge and experience. Maybe he doesn't try because the information divulged by the researchers is presented in an unintelligible, undigested, unusable form, or sometimes because the data are inconclusive or conflicting in substance. The administrator in turn may expect altogether too much of science, failing to recognize that the biological sciences lack that clean-cut, sharp precision that marks the mathematical or physical sciences. In biology, Nature never does anything on an absolute 100 per cent basis. She always gives herself so many exceptions, variations, and aberrations that almost every biological conclusion has to be qualified to some degree. Nevertheless, if the type of fishery research which is now being organized had been prosecuted as vigorously for the last 50 years, the administrator would be stripped of his principal alibi for failure and his problems would be cut down to size.

After all, knowledge can be stockpiled and drawn upon any time for almost any conceivable purpose. The chief current headache of the fishery administrator, perhaps, is the fact that the knowledge stockpile has barely been started

and is presently little more than a lump rather than a pile. In justice to the research people, we administrators should frankly, and maybe shamefacedly, admit that we actually haven't adopted and applied much of the information that is already available to us. The reasons for this are numerous and seemingly compelling, and some of them can perhaps be brought out in the discussions on this program later this afternoon. It is probably true that the fishery administrator is suffering right now from a slight case of factual indigestion, or shall we say, constipation. Anyway, we haven't assimilated all of the scientific nutriment that is ours for the taking. Let us leave this point with a statement of a paradox. There is now a serious shortage of basic scientific data and at the same time an insufficient recognition and use of the data that we do have. The way out of this dilemma seems easy, at least to prescribe—both get and use more facts. When it comes to using facts, the administrator gets involved in another paradox. He should assiduously employ horse sense in settling fish problems. What he does must be weighed and measured against practicalities which the fact-finding research man can and maybe should ignore—up to a certain point. If the researcher goes beyond that point into theoretical realms, he may achieve a measure of self-satisfaction in serving eternal truth, but he is of no more service to the administrator than a hole in the head. So, if the researcher is sometimes impatient or hurt because his findings are summarily ignored by the executive or administrator, let the fact-finder ask himself: Is my product usable? Does it make sense in a practical, workaday, imperfectly human world?

Speaking of utility and action, the administrator is expected by the public, by his technical and scientific colleagues, and generally by his own conscience, to *Do Something*. He is expected to *Get Action*, for the purpose of maintaining, restoring, or actually creating prosperous fisheries. Here let us insert a loaded question: "Aren't there a good many instances where a fishery administrator can do his job better by doing nothing?" Does it always follow that man's juggling of marine resources through regulation or by any other artificial means will automatically preserve the resource any better than Nature's own vast protective and restorative powers or bring about better human utilization of that resource? Some of you here will recall a situation which occurred when one investigator, after studying the Chesapeake Bay crab for several years, handed in conclusions which inferred quite clearly and plainly that protective regulations would be largely a meaningless gesture as far as having any direct effect on crab stocks was concerned. Administrators were ready and anxious to do something in this particular situation and were thrown for a loss when confronted with such a negative attitude. Aren't there situations in other fisheries where official inaction may be as beneficial and have as much merit as official action? Please don't misinterpret this. This is not an advocacy of "Let well enough alone" as a general policy for fishery administrators. It is simply an advocacy of a certain amount of vertebral rigidity—this is a more refined way of saying intestinal fortitude—in resisting pressure toward stampeding into unnecessary or ill-conceived measures alleged to be imperative in the interest of better management of a fishery resource. Is there or is there not any validity to an assertion occasionally made by a certain individual—namely, myself—that economics may, under certain conditions, be the most effective conservation measure that man has ever devised? To elaborate—when it is no longer profitable to fish, fishing stops, and there is always enough seed stock left to bring back the

resource. This is probably applying conservation and management the hard way, but it does work.

What has been said here about the problems of fishery administrators can be illustrated by a case history which has occurred within the last two months. This is mentioned without the slightest intent of implying any criticism against the people involved, and in fact, the writer has the strongest respect for them. Out in the Pacific Northwest, there is an organization known as the International Pacific Salmon Fisheries Commission which has the responsibility of conserving, managing, and administering the Fraser River salmon fishery. This organization is well financed, admirably staffed with the highest calibre of scientific and technical personnel, and in general has been continuously held up as a classic and an ideal example in the field of fishery research and regulation. Furthermore, it is dealing with an anadromous species—salmon—which conveniently and cooperatively resort to man's own backyards for reproduction which permits a degree of observation, analysis, and study which is probably not duplicated with any other species of fish. The Salmon Commission, on the basis of its years of study, had determined that the 1946 spawning seed stock in the Adams River area, a tributary of the Fraser, was capable of producing an abundant return during its cycle year of 1950. Preparations were made for an intensive commercial fishery based upon the fact that all of the known data amply supported a forecast for a good salmon run. It has been said that some five million dollars was the expected revenue from this run. Regulations were carefully prepared to take advantage of this jackpot. But something slipped. Only a pitifully small fraction of this anticipated silver horde showed up. Economic distress is already indicated. The Salmon Commission had hastily to correct its regulations in order to conform to this new set of circumstances. Here was an organization which was as well qualified as any in existence to call the shots and to act sanely and soundly in the management of this fishery. Yet the painful fact is that the organization was double-crossed by Nature somewhere along the line. The scientists and administrators making up this group may be criticized, but such criticism is unwarranted and unjust. They simply ran into one of those inexplicable phenomena which can upset the soundest planning and administration. The same thing can and will happen in other fisheries. The only insurance policy that can be written against it is to build up our reserve of knowledge regarding all phases of all of our fishery resources.

In conclusion, all the foregoing has attempted to make two basically simple points. They are: (1) administrators can do their job efficiently in direct proportion to the volume of reliable information available to them, and (2) the principle of doing first things first dictates that the research should be slanted directly toward answering present and pressing, urgent, practical questions. It should, by all means, be accompanied by concurrent research into more abstract fields of fishery biology, oceanography, and related sciences, since these latter studies are the ones—and the only ones—which will give that final and conclusive last word. It is hoped that the ensuing discussions will provide an opportunity to clarify some of the points, issues, and policies which concern all of us who have to translate ideas into action.