

A CONSIDERATION OF THE LIVING MARINE RESOURCES OFF CALIFORNIA AND THE FACTORS AFFECTING THEIR USE

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INTRODUCTION

“The living resources of the California Current System; their fluctuating magnitude, distribution, and susceptibility to use for the benefit of the State of California.

“What are the resources and what is the state of our knowledge?

“What are the legal, economic, sociological and technological problems impeding their best use? How can these be resolved?”

Such is the scope of the symposium to which we will address ourselves during the next day and a half. It is an ambitious undertaking, and I am neither so sanguine nor naive as to expect either an in-depth examination of the subject or final resolution of any major problems. If awareness and empathy result, the symposium will have served its purpose.

My role is to help set the stage. In doing so, I expect to look a bit at history, review today's problems, pose (but not answer) questions, suggest possible courses of action, editorialize and philosophize when it suits my fancy, and, in what I hope will be a subtle fashion, propound my point of view.

To start, let us look backward. It seems a fruitful way to begin, for an appreciation of the past can help us understand some of the attitudes of today.

THE PHILOSOPHY OF PLENTY

A philosophy of plenty so far as natural resources are concerned prevailed for generations in this country. It is quite understandable, for it was a philosophy borne out in truth for a very long time. A man named Richard Harlan stated it most succinctly:

“The manor of living nature is so ample, that all may be allowed to sport on it freely; the most jealous proprietor cannot entertain any apprehension that the game will be exhausted, or even perceptibly thinned.”

This appears on the title page of his book “Fauna Americana”, published in Philadelphia in 1825. This was both a long time ago and yet only yesterday. It was a long time ago, we like to think, in terms of our knowledge and understanding today, but it expresses a basic belief of Americans that is hard dying, particularly when we change the frame of reference from the land to the sea. It is only in the very near past

that we, as a society, have come to realize that the activities of man can indeed overpower, “the manor of living nature.”

My grandfather lived in San Mateo on the San Francisco peninsula at the turn of the century. He was an avid duck hunter, and lived only a short buggy ride from Coyote Point, an isolated spot on the bay where waterfowl abounded. He would have been astounded to know that a few decades later I found slim pickings in the sloughs and on the bay near there, and had reasonably good hunting only at the isolated south end of the bay near Milpitas. He would be even more astounded to see suburban Coyote Point today, lying under the approach to San Francisco International Airport, and the industrial and residential complex impinging on the Milpitas marshes. I am sure my grandfather and his friends never conceived of a day when ducks might be in short supply, for they lived in a local extension of Richard Harlan's time. Things were different when I came along.

It was as a duck hunter and student of what was—though I didn't know it then—marsh ecology that I learned in my early teens that resources were not inexhaustible, that man could and did control the environment, and that wildlife existed only on his sufferance.

This was of course nothing new. Such prominent men as Theodore Roosevelt and John Muir had long preached the doctrine, and it was a well-established principle ashore before I reached my unschooled conclusion. There is, however, nothing like experience to drive a point home, and it sometimes takes little short of economic or biological disaster to convince the man who does not want to believe.

Yet when one looks to the ocean and considers its vast extent and seemingly endless resources, it is not difficult to understand why the lessons learned on land seemed of little consequence. The passenger pigeon, the buffalo, yes, man could annihilate these terrestrial creatures, but the ocean must be a bottomless cornucopia. Thus man fished without restraint, and, with few exceptions, did so with little or no fear of a decline in stocks until the last few decades.

It was so in California, when the sardine fishery reached its zenith in the thirties and early forties. The conviction of processors and fishermen alike, that the supply was endless, was so strong and so powerful that early warnings by scientists that a danger point had been reached were unheeded, ignored, or, if

necessary, refuted by political force or by public scorn. This conviction was widespread and honest, and those few who had their secret reservations generally sublimated them to the hope that at very least the evil day lay far ahead.

It is said by some today that the scientists of the 1930's and 1940's were right but for the wrong reasons; that the industry recognized the basic scientific fault and thus was justified in its stand. I would say the scientists were right for the right reasons in the frame of reference of their time, and that the more powerful analytical tools of today only emphasize how right they were.

Be that as it may. In our society of the 1960's there is general acceptance (grudging though it may be in some circles) that there is a bottom to the cornucopia, that the resources of the sea are not boundless, that man must exercise some restraints upon himself if he is to reap maximum benefit from what there is.

CALIFORNIA OPINION: TEMPERS AND TEMPERAMENTS

People are slow to forget, and it is small wonder that many of us today look back on the fate of the sardine fishery and say: "That must not happen again to any other of our marine resources, even if, to insure against it, we must curtail fishing effort to a level far below that which the scientists say is there for the taking." The findings of the scientists, the desires of the commercial fishing industry, the fears of the sportsmen have all combined to bring about today's muddled situation. It is a situation in which biology, sociology, economics, politics and law have met head on, a situation which has brought about a stalemate, vituperation of good men by good men, a choosing of sides, an outward unwillingness to compromise, a resultant vacuum in fisheries utilization which will none-the-less be filled ultimately by someone more anxious than we to make full use of what the ocean has to offer.

We hope that reason will prevail, that it will be Californians who reap the harvest of the adjacent sea, reap it with the blessings of all Californians in such a fashion as to fulfill the needs and protect the legitimate requirements of all segments of our society.

Today we in California are directly up against a major confrontation between two user groups, a confrontation which has so far precluded development of a latent resource which scientists feel is there for the taking. The resource, obviously, is the anchovy, the user-groups the sportsmen and the commercial fishing industry. Industry says, "Look—the scientists demonstrate a big population capable of withstanding a large fishery within the framework of maximum sustainable yield. Allow us to harvest it." The sportsman replies, "Even if we assume the scientists are right (and they just could be wrong), who is to assure us that once the camel's nose is under the edge of the tent he will be satisfied, and not through sheer force take over full occupancy. We need anchovies

for game fish forage and for bait; let us take no chances that the history of the sardine will be repeated."

There is nothing new about sports-commercial conflicts. To help set today's conflict in perspective, I quote from two books published nearly two decades ago. J. Charles Davis 2nd in his "California Salt Water Fishing" published in 1949 had this to say,

"It is an axiom that the fish and game of America belong to the people, and it is too bad to have to report that the people have sadly neglected their property. They have allowed ruthless commercialism to step in and almost exterminate the food and game fish of the ocean.

"Conservation is a fine, high-sounding word but so long as it remains just a word and not a fact it might just as well be left buried in the dictionary.

"Many of us have been preaching conservation for years; urging the enactment of legislation to curb the wanton destruction of the fish of the ocean. Our efforts, I am sorry to say, have borne little fruit. Always we were met with the specious statement that 'the ocean can never be depleted.' We were told that the ocean was vast and teeming with fish. They could never be exhausted.

"The signs were there, plain for anyone to read. But men failed to heed them."

Not every sportsman was that pessimistic, for the chronicler of "History of the Tuna Club (Avalon)" said in 1948,

"To define 'conservation' succinctly is to say that commercial fishing and angling for sport should be carried out in such a manner that salt-water game fish will, at the very least, be preserved for all future fishermen. We say, 'at the very least;' the preferable goal, of course, would be that the supply of game-fish should actually be increased.

"So far as the California Fish and Game Commission and ocean sport-fishing are concerned, it is an important fact, always present in the minds of the Commissioners, that the interests of commercial fishermen and anglers overlap. . . .

"For some fifteen years there has been much bitterness between the two groups. In 1946, it was possible by means of meetings between the conflicting parties, to compose many of the difficulties hitherto existing.

"In its latest report, the Bureau of Marine Fisheries states: 'under the guidance of their present capable leaders, the organized sportsmen and the commercial fishing industry should enjoy more harmonious relations, to the benefit of the entire fishery.'"

What happened at those meetings in 1946 obviously was of little lasting value, and Mr. Davis apparently discounted it completely.

The important thing is that the effort was made and for a brief moment it seemed that rational agree-

ment might prevail. Instead the situation has deteriorated, and Mr. Davis' remarks seem quite mild when compared to some of the public statements made by proponents of both camps during the past few years.

If the sociological problem with reference to anchovies were the only one facing us, life would be relatively simple. But there are other resources which can be tapped, and there are other problems which we must solve. It behooves us to attack them rather than each other, for sooner or later, others will harvest that which could be ours if we, as Californians, persist in fighting among ourselves. We cannot afford the luxury of this conflict.

A LOOK AT THE WORLD TODAY

Before we can evaluate realistically the internal problems which beset us, we must first place the problems of California (which are not unique) in perspective, and look at them as part of a much larger framework, that of the real world of today.

A number of people¹ have estimated the food potential of the sea. These authors arrive at divergent answers from different assumptions but all show the existing world harvest to be far below potential production. It is evident that (i) there are far more fish (or their equal in protein) in the sea than man is harvesting, and that an unharvested surplus each year is dying and adding to the accumulated nutrient reserve of the ocean; (ii) a large proportion of the world's people are undernourished and animal protein deficiency is in no small measure responsible for mankind's woes; (iii) the population of the world is increasing at a rate which will see a doubling of the globe's population during the lifetimes of the younger of us; (iv) the need for food will be intensified with population growth, and the need for recreation will become even more important than it is today to the well-being of man on a crowded planet,² and (v) an obvious partial solution to the food problem is the efficient harvest of living marine resources.

Powerful forces throughout the world are moving toward the sea today. These forces are stirring in our country, other nations are already actively harvesting the global resources; still others wish their share. Witness the aggressive program of the USSR which finds it fishing today throughout the world ocean, including many banks off the California coast. Witness the proposals before the United Nations, which if implemented would place the resources of the sea bed under the control of that body with the products and profits of their extraction internationalized and the primary benefits falling to the emerging nations, the ones in which burgeoning population and protein deficiency are paramount facts of life.

We in the United States have an obvious responsibility in world affairs to bear a major portion of the load in resolving these matters. We have as well a responsibility to ourselves to insure that what resources we have are husbanded.

¹ For example, see Bogorov, 1965; Chapman, n.d.; Schaefer, 1965; Schmitt, 1965.

² This begs the question of how long the affluent society of the U.S. can afford the luxury of recreational fishing if it comes to a case of food or recreation. For the moment we are lucky.

If we do not choose to harvest what is available to us, we cannot quarrel with those who wish to fish off our shores. But at the same time we can choose to utilize to the fullest that which is available to us, utilize it for purposes of food for ourselves and for others, and to provide as well the recreational outlet so vital to society in our country today.

California thus occupies a unique position as of this moment. It can prosecute sea fisheries for its benefit and for the benefit of others if it wishes. The option, however, will not last forever.

A CLOSER LOOK AT CALIFORNIA'S PROBLEMS

What must we as Californians do, what problems must we resolve, if we are to do that which we can? Where do California's fisheries stand in the real world of today?

We have only to look at the catch figures to see that our commercial fisheries have been on a downward slide for years. We are lucky recreationally for the stocks of fishes which are the concern of sportsmen still provide good fishing for them. Fish do not abound as in the good old days, but things never seem as good as they once were. And true, the pot is being divided many more ways, so the apparent yield in terms of you and me is less.

Yet the scientific findings point toward the existence of stocks which could support commercial fisheries greater than we have ever known in this state. There is no reason to believe that their harvest would impinge on the legitimate requirements of sportsfishermen, given only realistic controls by reasonable men.

We need to inquire deeply into the factors impeding fishery development in California, which leads one back to a consideration of the matters alluded to earlier. The inhibitions facing us result from the interaction of many disciplines, and seem to stem from lack of knowledge, lack of trust, simple greed, and fear. Simultaneously, the solution lies in the framework of these same interactions.

Science

The scientific problems are fundamental. Without their resolution there is little hope for solution of the broader aspects. Just what are the resources, what is their magnitude, their availability, their susceptibility to capture, their sustainable yield? We know a great deal—what happened to the sardine, the general magnitude of the anchovy population, estimates of the size of some others—but there is much more to be learned. Further, and what is more important, the scientist has so far failed to interpret to the concerned public that which he does know. Until the interpreter acts, the results of the finest scientific analysis remain unused in the broad sense; the worthy publications may bring fame to the authors among their peers but they fail so far as society is concerned to fill the need.

Scientific inquiry continues, the bank of scientific knowledge grows, the problems of interpretation can be solved. Then what?

Given at least first order estimates of population magnitude, what factors still impede resource development? And what do we mean by development? Maximum sustainable biological yield, the usual measuring stick; maximum sustainable economic yield, a lower value in terms of tonnage; maximum sociological yield—that which would provide optimal recreational value and yield a tonnage smaller yet; or still something else?

Economics and Technology

Economic and technological problems from the standpoint of commercial exploitation are no small matter. Can we, with our standard of living and our wage scales, compete in the world market with our products; can we even market them profitably in our own country? The market exists and is increasing but it is being filled by an ever-growing level of imports concurrent with a decrease in domestic production. The California tuna fishery is strong, but that is our only bright light. But surely if the tuna industry can compete successfully on the world market, so can our local seiners and trawlers, given some ingredient which may be no more than a realistic hope for the future which will revivify the spirit of our fishermen and restore the confidence of those in a position to venture capital in fisheries development.

Sociology

The sociological problems exemplified by the conflict between recreational and commercial fishermen have been defined, and these are most serious. There are as well conflicts within the sport and commercial communities, and conflicts between either or both of them and other extractive users of the ocean plus conflicts with non-extractive users.

There are many examples. For instance there was for years a law prohibiting the possession of a drag net within three miles of the southern California coast. This was not, according to people with long memories, a restriction imposed by sportsmen's request, but rather one stemming from the fear of commercial set line fishermen that the efficient trawl would put them out of business. Development of offshore oil islands near Santa Barbara has brought cries of dismay from non-extractive users of the ocean who feel this is not an area to be commercialized, and from worried commercial fishermen who see potential diminution of their fishing grounds. The interaction of sea otters on abalones in the last year or so has put sportsmen, commercial men and nature lovers at loggerheads.

Law

Given solutions to the scientific, the sociological and the economic problems, there remain those of law. The several states have the responsibility and the authority to regulate the take of living resources save where the federal government has preempted this authority through international agreement. California can regulate the anchovy fishery which is not under international control, but it cannot regulate the take of yellowfin tuna which is the subject of an international treaty to which the U.S. is a partner.

It is incumbent upon the states to pass wise regulations permitting the allowable take with a minimum of restrictions if commercial fisheries are to reach their full potential. Unfortunately, the pattern of the past in this country has been to impose severe restrictions as to seasons, gear and areas which too often have acted to preserve the inefficient operator and to prevent or inhibit the investment of capital in modernization of plants, boats and gear, and in the development of more efficient fishing techniques.

Beyond state and federal law there lies international law. Much of California's fishing effort takes place more than 12 miles from shore. State waters extend to 3 miles, the contiguous fishery zone to 12; beyond that are the high seas where anyone may fish subject only to international law and to terms of such bilateral and multilateral treaties as the flag of the individual fishing vessel may be party.

The Geneva Convention of 1958 on Fishing and Conservation of the Living Resources of the High Seas provides for international cooperation to insure conservation of the living marine resources, requires that conservation measures be based on scientific findings, and says, in effect, that a coastal nation has no claim on living resources of the adjacent high seas unless they are subject to scientific management. Any nation can fish off another; it can be constrained only if the scientific data show the fishery to be exploited beyond its maximum sustainable yield and then only through procedures set forth in the Convention. The coastal nation has no day in court unless its fishery management program is based on scientific findings and only a leg up on other nations if it is practicing scientific management.

Obviously, legal matters at the state, federal or international level can make or break any given fishery in California or elsewhere.

ROLES, RESPONSIBILITIES AND GOALS

The interaction of these various disciplines—biology, sociology, economics, and law—can be disastrous or it can be fruitful. The interaction is severe in California today, and whether the long-term results will be fruitful or disastrous remains to be seen. The fishery scientist has been rather aloof if not innocent of this interplay and the impact it has on the application of the results of his research.

The role of the scientist in a broadly-based research program such as CalCOFI is a matter of argument. While the scientist tends to believe his work is done when the results are published, many people believe he should consider socio-economic and political factors in making his recommendations. The present CalCOFI Committee takes the stand that

“The CalCOFI Committee adheres to the principle that the individual scientist's work is finished with publication but that the committee itself has an obligation to recognize and so far as its capabilities permit aid in placing these

findings in perspective within the social, economic, and political milieu."³

Because of the critical state of affairs in California, and because it seemed wise both to inform the individual scientist of the facts of bio-political life, and to provide a scientific forum before which the protagonists of various interests could express their points of view, the CalCOFI Committee has made a deliberate departure from past patterns in organizing this symposium. Earlier conferences were designed specifically to provide an interchange of ideas on scientific research in progress, and we anticipate that future ones will revert to the original format. But this year seemed the time for deviation; the scientists are wondering if their efforts are appreciated, whether the work is worth doing in view of the seeming failure by both the public and private sectors to act on the scientific findings. Their questions deserve answer. Further, bringing proponents of widely divergent interests together will, we hope, be a first step toward mutual understanding in the area of sport-commercial relationships.

California has too much at stake to let its fishery resources go by the boards, be they sport or commercial. It behooves those responsible for administration of the fisheries, those interested in harvesting them for whatever purpose, and for the public at large which wishes as viable a state economy as possible,

³ From text of approved final draft, November 1967, of CalCOFI Committee report "Partial review and proposed program for research toward utilization of the California Current fishery resources," later published in Calif. Mar. Res. Com., CalCOFI Rept., 12:5-9, 1968.

to see that differences are resolved and that a management plan for living marine resource utilization is evolved and implemented on a sound scientific basis. Failure to do so can only result in loss of many of these resources to some nation other than the U.S. With the growing demand for animal protein food in the world, the latent resources will not long go unfished, and the underfished resources will be exploited to the extent that is feasible.

We hope to see this fishery development undertaken by Californians for the sake of the recreation that can be provided for our citizens, the economic contribution that can accrue to the state, and the contribution we can make toward a solution of world problems through the export of food, of technology and of scientific knowledge.

To these ends this symposium is dedicated.

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