

Estuaries: an Action Program to Save Them

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Abstract

The importance of estuaries to both commercial and sport fishery resources is well established. Also documented is the danger of destruction facing this unique coastal zone. Currently there is an active and growing interest in our nation's conservation programs. To guarantee that our estuaries have a prominent place in these efforts, we need an action program that will (1) get the facts, (2) inform the public, and (3) formulate and support rational legislation. Progress is being made along these lines.

THOSE VAGUELY DESCRIBED and little-understood coastal areas called estuaries—the zone where fresh water, land and sea meet—have suddenly assumed national significance.

In some ways this is surprising because estuaries comprise a very small part of the United States, less than 1 percent. There are only about 8 million acres of basic fish and wildlife estuarine habitat. Half of that borders the five states on the Gulf of Mexico.

In another way it is surprising that it has taken so long for these areas to receive national recognition because they do play an important part in our marine fisheries. It is estimated that 90 percent of the total harvest of seafood by our fishermen comes from the Continental Shelf, and two-thirds of the species involved depend in one way or another on estuaries. This value is even higher in the Gulf of Mexico; 90 percent of the commercial catch is made up of fish and shellfish that spend some part of their lives in these inshore waters. The fisheries they support add many millions of dollars to our national economy.

Another fact that has brought estuaries into national prominence is the alarming rate at which they are disappearing through the encroachment of civilization. About 7 percent of the Nation's estuaries have been destroyed already. The estuaries in the Gulf States have not suffered to the same extent as others, but at least 4 percent of the Gulf estuarine areas has been totally removed from a biologically productive status.

I do not intend to dwell on the mechanism that makes an estuary productive or the nature of the many alterations being made in them. You have heard reports on these subjects over the past 10 years with increasing frequency. I am going to assume that you have been convinced that estuaries are important to our fishery resources; that they are vulnerable and in serious danger of destruction.

What do we as conservationists do now? I believe a three-pronged approach is necessary. First, we must get the facts by intensifying research in the estuaries. Then, we must make these facts known to the public in language that will be understood. And, finally, we must formulate and support rational legislation.

There is no substitute for facts when dealing with any controversial problem,

and estuaries are no exception. Research in estuaries has increased to an impressive level, but the emphasis is very recent. We still do not have all the answers, but the possibility of getting them is improving. Not only are a variety of institutions—federal, state, and private—studying these shallow waters, but their representatives are beginning to consult each other, coordinate their investigations, and exchange information.

The five Gulf States through the Gulf States Marine Fisheries Commission have agreed upon a four-phase study that will employ standardized methods for data collection and reporting. A format has been adopted for recording the data so they can be handled by machine methods. These investigations have been slow in starting, but at least they will have the advantage of sophisticated methods that were unknown a few years ago.

The first phase of this interstate effort is under way now. It will provide detailed descriptions of the estuarine basins, including such things as surface area, depth, vegetation, geology, environmental characteristics and economic development both present and planned.

The other three phases of the study are hydrology, sedimentology and biology. The biology phase will define:

- (1) The major commercial species appearing in the estuary both as juveniles and adults,
- (2) The quantitative distribution of each of these species seasonally and areally,
- (3) The value of harvested species in and resulting from the estuaries,
- (4) The correlation between hydrological characteristics and relative abundance of selected organisms.

A great deal of this kind of information is already available as a result of studies on individual species. It is scattered through numerous records, both published and unpublished, and needs to be brought together in one place.

This study will provide a measure of the economic value of estuaries. It will provide the broad principles and specific details needed for optimum management.

The interstate commission dealing with the marine fisheries of the 15 Atlantic States also has been active in promoting estuarine research. It has published an excellent leaflet on developing and managing estuaries, and is planning to issue another leaflet describing Atlantic estuaries in some detail. At a recent meeting, interest was expressed in a cooperative state program similar to that in the Gulf. Adoption of the same standardized study methods would be beneficial to all concerned, and data on punch cards deposited with National Oceanographic Data Center could serve many other purposes; purposes not even within the powers of our imagination today.

It is generally agreed that ignorance has been a major, if not controlling factor in dealing emphatically with the complex human uses of the estuarine zone. This is a positive proposal for correcting that deficiency.

Now for my second point: informing the public in terms they can understand. I think this is very important. It is high time more people became concerned about estuaries—where they are, what they are and what is happening to them. In the final analysis, it is an informed public that will dictate the course of action by our legislative and regulatory bodies. Let me give you an example of a battle fought and won over one of our bays on the west coast of

Florida. This relates to a dredge and fill application which has been pending for 9 years. The applicant purchased submerged land adjacent to his upland, and in 1958 proposed to fill 11 acres of it in order to expand his trailer court. Biological surveys showed the proposed fill area, and the area from which fill material would be dredged, to be highly productive. Thirty-four species of fish and 50 species of invertebrates were taken in significant numbers. Twelve of the fish were important commercial or sports species, and the remainder were forage species. Many were juveniles occupying the area as a nursery ground. While the proposal called for a fill of only 11 acres, destruction of the area assumed more than usual significance because it would add to the cumulative effect of many earlier fills in the same bay. The question was simply, "Which is more important—an enlarged trailer court, or a valuable fishing ground and nursery ground for marine species?"

On the basis of these findings, the application was denied at the county level as being adverse to the public interest. When the case was appealed to the State Supreme Court it was held that the applicant had certain rights to the use of the submerged land he had purchased, and the county was ordered to issue the permit. While further litigation was in process, the applicant requested a permit from the Corps of Engineers, by-passing other local authorities. By this time the matter of an additional fill in this bay, even though only 11 acres, was an issue of wide public interest. Garden clubs, the League of Women Voters, the Audubon Society, a fisheries trade association, legislators, university professors, students and a large local group that called themselves "The Save Our Bays Committee" opposed the issuance of a Corps' permit.

Obviously, there was a public awareness of the importance of this particular estuary, and a good-sized segment of the population was ready to fight for its protection. The two sides met head-on in November 1966 at a 5-hour hearing held by the Corps of Engineers. After examining all of the hearing data, the Corps in March 1967 rejected the application and explained its decision in these words: "It is the feeling of the Department of the Army that issuance of the permit would result in a distinctly harmful effect on the fish and wildlife resources of this bay." This was the first denial of any fill permit by the Corps based solely upon fish and wildlife needs. This is a landmark decision and one that I doubt very much would have been made entirely upon the evidence produced by conservation agencies. It was the aggressive fight by an informed public that did the job.

Another good example of the effectiveness of an informed public occurred within the past month. A large chemical company in the central Gulf area applied to the Corps of Engineers for a permit to dump immediately 2 million tons of gypsum waste material into waters about 15 miles off the mouth of the Pascagoula River and to continue dumping such material at the rate of 2,000 tons daily thereafter. It was determined that the dumping site was an important fishing area for industrial species and shrimp worth \$3 million a year. It was determined also that the waste material could have adverse effects on larval fish, plankton, filter-feeding fish and benthic organisms. The type of waste also could pose problems for trawling operations. Our agency registered a protest and requested that the permit not be granted. In the meantime, notice of the permit application had come to the attention of various conservation agencies, industry associations and conservation groups. Opposition was aired in news letters and editorials and became so loud the applicant withdrew his request

for a permit on the grounds that "other uses and disposal methods appear more economically feasible than Gulf disposal." The voice of an aroused public obviously is more clearly heard than the stoic facts of scientists.

The third prong of this suggested approach to the conservation of estuaries is the sponsoring and enactment of rational legislation.

I have come to the conclusion, as I am sure many others have, that even with the best of intentions municipalities and counties alone can do little to protect estuaries from destruction. Experience has shown that many have little interest in doing so. The states must act to help local government. And above all, the Federal Government must take the lead where other levels have defaulted or are incapable of action.

Massachusetts is one state with effective legislation to protect estuaries. It requires permission of the Commissioner of Natural Resources to alter coastal areas. In a classical case, an application for filling a marsh area owned by the applicant was rejected "in the interest of protecting marine fisheries and maintaining the ecological components of the estuarine complex." Taken into the courts, the law and decision of the Commissioner were upheld and in doing so the judge said, "Property is acquired by private citizens with the tacit understanding that it shall not be used to the detriment of the public." Developers die hard, and this case has been appealed. But it is significant that at least one state and one legislature and one judge decided that an estuarine marsh is necessary to protect marine fisheries and is worth more in this respect than a marina.

The Florida Legislature this year enacted a protective measure that strictly forbids the sale of state-owned submerged lands, the setting of bulkhead lines, or the issuance of dredge and fill permits, if the harm to the natural resources would be so great as to be contrary to the public interest. Determination of the effect on the public interest must take into account biological and ecological studies by the State Board of Conservation. A little stinger in this new law requires that such studies be paid for by the applicant.

A number of related bills have been introduced in the present Session of Congress, both in the House and the Senate, proposing solutions for some of the national problems of estuaries. Best known among these is H. R. 25 introduced by Congressman John Dingell. It calls for the Secretary of the Interior to make a national inventory of estuaries in cooperation with other federal agencies and the states. It provides for a national system of preserved estuaries that would be made up of areas protected by local and state governments and by federal agencies. It requires permits both from Secretary of the Interior and the Corps of Engineers before any dredging or filling work can be done in estuaries, and authorizes denial of a permit if it is determined that the natural resources would be unreasonably impaired. An Interior Department permit would not be required if the state has its own system of protection and conservation of estuaries. This gives the states first chance to act.

The bill has many supporters, but it is not unopposed either. The Corps of Engineers, for example, has recommended that authorization be limited to a feasibility study. Advocates of the bill argue strongly against further delay and urge adoption of interim controls while studies are in progress. It now seems doubtful that this legislation can be enacted at this Session of Congress. Re-introduction is certain and passage is likely in the next session because of the now unified state support for the revised bill.

The estuaries are still in a precarious position, but I think we can be a little more optimistic about their future. We can be optimistic because of the accelerated research effort to understand estuaries. We can be optimistic because of the growing public awareness of their importance. And we can be optimistic because of the current attention focused on estuaries by our law-making bodies. The future for estuaries looks brighter now than it did even a few months ago.