

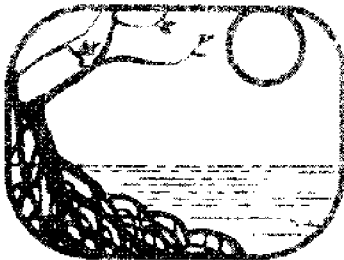
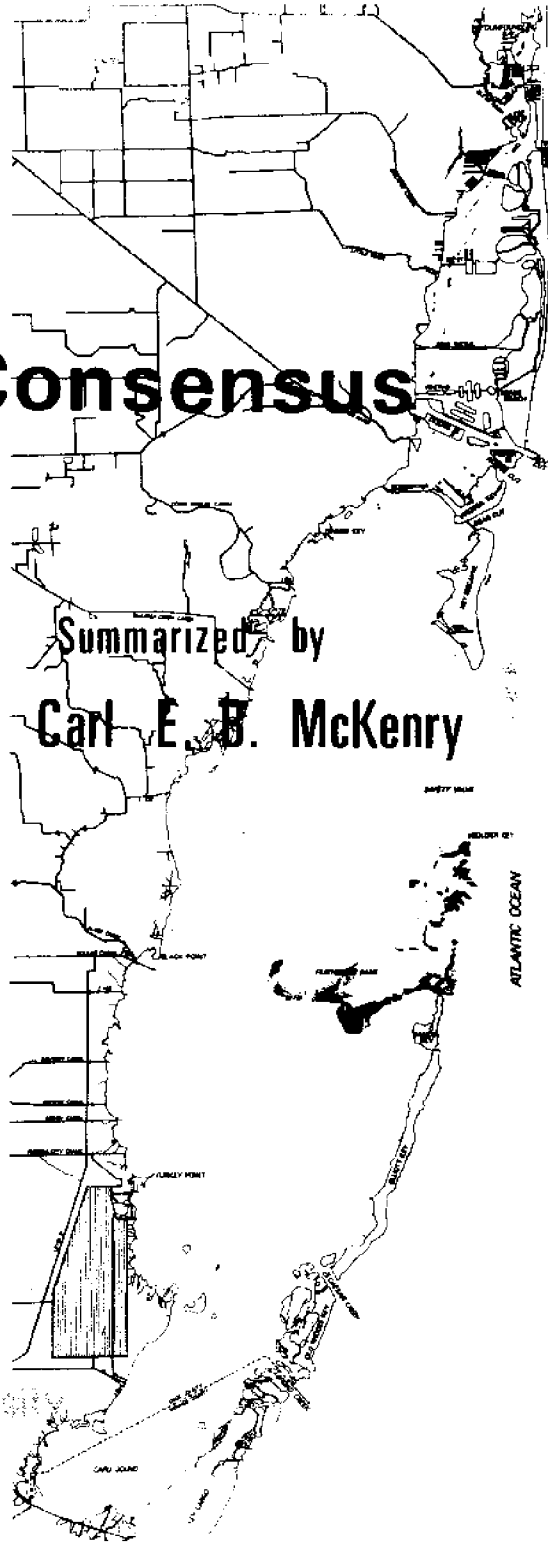
# Biscayne Bay Symposium II

1. Environmental Quality
2. Utilization
3. Management

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## Consensus

Summarized by  
Dr. Carl E. B. McKenry



University  
of Miami  
Sea  
Grant

Special Report  
Number 6  
April, 1976

**Biscayne Bay  
Symposium II**

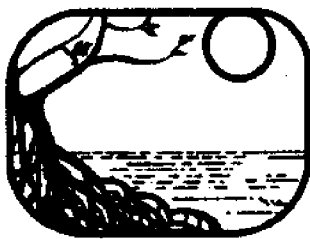
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**Consensus**

COMPLIMENTS OF  
*Sea Grant*  
UNIVERSITY OF MIAMI

Summarized by  
**Dr. Carl E. B. McKenry**



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# Table of Contents

	Page
Foreword . . . . .	1
Historical Background. . . . .	ii
The Consensus, summarized by Dr. Carl E.R. McHenry . . . . .	1
Address, by Nathaniel P. Reed, Assistant Secretary to the Interior for Fish and Wildlife and Parks . . . . .	9
Appendix A, the Workshop Questions . . . . .	19
Appendix B, Biscayne Bay Symposium II Program. . . . .	23

# Foreword

This publication is one of the products of a process of two symposia on Biscayne Bay held April 2-3 and April 9-10, 1976. Symposium I was accompanied by Sea Grant Special Report Number 5, "Biscayne Bay: Past/Present/Future" a 315-page summation of the status of knowledge of the Bay. The process of Symposium II was the attempt to arrive at a consensus on technical and management issues raised by Symposium I and the background Sea Grant publication. A major part of that process was the keynote address to Symposium II participants by the Honorable Nathaniel P. Reed, Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior, whose long-time familiarity with Biscayne Bay was presented in the context of the larger experience gained in his distinguished career at the state and national level. We have thus decided to publish Mr. Reed's address along with the summation of the deliberations and conclusions of the four workshops of Symposium II, developed in three sessions at the University of Miami's Rosenstiel School of Marine and Atmospheric Science.

The summation of Symposium II published here was prepared and presented by Dr. Carl McKenry who worked with the rapporteurs present in each workshop. The questions which the workshops address are also published to permit the reader to relate conclusions to the questions discussed: In developing the summation, Dr. McKenry skillfully wove a complex of issues, opinions, and positions into a coherent, cohesive document which will not only stand as a record of what was said and done, but also will be the basis for continuing action in the issues involved in preserving or restoring Biscayne Bay.

E.H. Man

# Historical Background

Biscayne Bay's geographical history is relatively short, starting about 1100 B.C. Small settlements along its shores began around 300 A.D. and nonagricultural peoples utilized available resources until approximately 1763 A.D.

After an uninhabited, but exploitive 40-year period, pioneer agricultural colonization of the Bay shores began and continued through the 1800's marked by Seminole and Civil Wars, military operations, and substantial natural coastal changes.

Biscayne Bay (including Card Sound and Barnes Sound which geographically constitute a part of the South Bay) is a shallow, north-south trending basin 2 to 6 meters in depth.

There are several stories about where the Bay got its name, although many assume it is merely a variant of the Bay of Biscay, in the Atlantic Ocean north of Spain and west of France. One version is that it was named because of the wreck there of a ship belonging to a man called El Biscaino (the Biscayan, from the Spanish province of Biscaya). I understand that Marjorie Stoneman Douglas accepts that version.

Another version is that the former Keeper of the Swans at the Spanish Court, Don Pedro el Biscaino, settled on one of the islands. In any event, Biscayne by any other name is not as sweet as it once was.

In 1896, when the City of Miami was founded, Biscayne Bay existed in a relatively natural condition. However, development began shortly thereafter with the construction in 1905 of Government Cut, an artificial inlet and the Miami Ship Channel. The peak of development occurred in the 1920's with causeway construction and another artificial inlet, Baker's Haulover, in 1925. By this time, the circulation of the Bay was completely altered from its original condition and, in fact, water quality was improved by virtue of a much greater exchange of water between the Bay and the ocean. This was offset, however, by the resulting erosion problems particularly those created by the seaward extending jetties from Government Cut in 1929.

Further environmental setbacks occurred through the construction of causeways and other land fill operations which has decreased and constricted the circulation within the Bay. By 1927, MacArthur, Venetian, and 79th Street

Causeways, the creation of the numerous residential fill islands bordering the causeways, and the filling and bulkheading north of the Miami River had been completed. Canals at an ever-increasing rate were cut westward from the Bay. Since World War II, the Rickenbacker Causeway has been completed and the Miami Ship Channel has been further deepened and enlarged with the addition of the Dodge Island port. Also, two other causeways have been added, Broad and Julia Tuttle.

Because of the massive changes and development around, in, and to the Bay, the Bay area north of a line running eastward roughly from Coconut Grove, south of Rickenbacker Causeway and Key Biscayne is referred to in our considerations as the North Bay area.

The construction activities of man in the northern portion of Biscayne Bay have been so extensive that it can almost be considered as an artificial waterway. While the alterations in the tidal prism and construction of inlets have been such as to improve water quality, in contrast to areas on the Gulf Coast such as Boca Ciega Bay near Tampa where land fills have blocked the circulation, the activities have completely altered the biological systems and destroyed shore vegetation and bottom growth.

With this in mind, the State Legislature enacted a law designating Biscayne Bay as an aquatic preserve. This law was signed by the Governor on June 11, 1974. Stating its intent to preserve an essentially natural condition, the law places stringent controls on future work in the Bay.

A number of other devices to halt further deterioration of the Bay---even to restore some fraction of its pristine quality---have been advanced. But before action can be taken, public consensus must be assessed. --Dr. Carl E. B. McKenry

# The Consensus

BY DR. CARL E.B. MCKENRY  
Assistant to the President for External Affairs

This symposium has been directed to one specific body of water--its past, present and future--Biscayne Bay. Using the American Assembly format and procedure four hopefully representative groups considered the same sets of questions regarding the Bay. They are attached as Appendix A.

Our consideration of the Bay was divided into three major areas:

I. Environmental Quality, II. Utilization, and III. Bay Management.

At the outset of this summary I want to acknowledge the devoted work of the rapporteurs who met with me often to report orally on the proceedings of the workshops to which they were assigned and then to type their reports in greater detail. The rapporteurs were Ms. Jean Yehle, Information Officer of the Rosenstiel School of Marine and Atmospheric Science; Ms. Louise Blanchard, of The Miami News; Mr. Dick Holland, also of The Miami News; and Mr. George Volsky, of The New York Times. Dr. David Cartano, co-chairman of Symposium II, filled in where needed. The choice of professional journalists for the job proved wise indeed.

I must also acknowledge the assistance of the workshop moderators. They attended some of the report sessions and suggested changes of emphasis. The able moderators were Dr. Warren S. Wooster, Dean of the Rosenstiel School of Marine and Atmospheric Science; Ms. Juanita Greene, of The Miami Herald; Ms. Susan Uhl Wilson, commissioner, the Florida Department of Environmental Regulation; and Mr. Thomas Buchanan, Sub-District Chief of the U.S. Geological Survey. We thank them very much.

To begin:

## I. Environmental Quality

Water quality is a key to the restoration and preservation of a healthy Bay, or in legal terms, Aquatic Preserve Area. One element of water quality maintenance is the regulation and control of boat discharges into the Bay. Proposed rules requiring new marina in the area to contain and utilize pump-out facilities for the boats they berth are both reasonable and desirable.



Wherever possible, existing marine facilities should be required to install pumping equipment for use with live-aboard vessels as a very minimum.

Such regulations should be developed with due regard for new Coast Guard regulations which will force vessels to have such equipment within the next few years.

Smaller (e.g. less than 25 feet) non-live-aboard boats and open water operations present a more difficult enforcement situation as desirable as such regulations might be. However, these operations do not present a problem which carries the same degree of significance as do marinas, particularly those with permanently berthed "live-aboards." Regulation and enforcement in open waters should be primarily through the Coast Guard and improved technology in regard to waste disposal equipment aboard ships.

In addition to the more general State and/or Federal requirements, there will be a need for regulation of a more specific nature on the part of the County to fit the particular situations presented by the Bay as to discharges of all kinds into it. The County should not hesitate to promulgate more restrictive rules whenever it clearly appears that they are appropriate and not in conflict with Federal and/or State jurisdiction.

There can be no denial of the economic impact of the increasingly stringent regulation of discharges into the Bay. Ultimately the resulting increased costs of goods and services will be passed on to the consumer. For this reason, new, more restrictive regulations should be implemented with great care to assure a clear-cut justification for the economic impact of the proposed remedy in relationship to the magnitude of the pollution problem to be ameliorated.

If such prudent caution is exercised in the application of controls, the economic trade-off of an increasingly attractive Bay against the additional costs should at the least be a reasonable and acceptable trade-off. It was noted that the equipment technology developed in connection with recreational vehicles over the past five years has not diminished their popularity and can be increasingly applied to marine activities.

It should be emphasized that a clean Bay is itself an economic asset. Moreover, the alternative of an increasingly polluted Bay with attendant unwholesome characteristics is no more economically acceptable than stricter regulation.

A problem of particular concern in the South Bay area is that of fertilizer and pesticide runoff. Existing regulations appear adequate and should

be strictly enforced immediately as a threshold point in addressing this problem. On-site training in new technology, and management and application techniques to the farmers and their employees would further resolve the difficulty (e.g. properly washing down of equipment and more care in aerial application of pesticides). The problem of agricultural runoff to the Bay or through canals to the Bay can be further abated by the use of swales and berms between fields and canals. This approach should be implemented as rapidly as possible.

### Biota

Biota constitutes the second element of our consideration of environmental quality.

A current issue in this regard is fishing activities within the Bay. Traditional bait and line fishing, whether sport or commercial, is generally acceptable in the Bay with appropriate regard for spawning and other seasonal adjustments. With care and maintenance the Bay has the capacity for both sport and commercial fishing activities of this type.

Limited net fishing, may be acceptable, but should be carefully controlled by licensing and inspection to the greatest extent possible. Other than roller nets, the use of nets for indiscriminate bottom trawling in the Bay should be prohibited altogether and strictly enforced.

South Bay mangroves have to be regarded as part of the Biscayne Bay ecological system and should be managed and regulated accordingly. Construction permits should be granted only after ensuring that such construction will not damage the Bay's natural water system. So-called areas of induced mangrove growth should be treated initially as a part of the total system when application for construction is made. However, recognizing the hardship upon a property owner, upon demonstration that it is of inconsequential impact on the shoreline system or that mangrove trade-off can be made, such areas should be under private control. More scientific study in regard to mangrove productivity and environmental impact is required before more detailed regulation.

General environmental requirements should apply to the entire Bay. However, certain portions of the Bay will require specific action which may differ from other areas not unlike a master plan for land development. Regulations involving water quality and health must have universal application. Resource

management regulations may deviate, with the focus on preserving the central and South Bay and improving the North Bay.

The efforts to improve or restore parts of the bottom or edge of North Bay will be a complex and costly enterprise. It is doubtful that a complete restoration of the natural sea grasses and mangroves can be attained within economically feasible and acceptable cost limitations, but selected projects on a priority basis should be undertaken. Priority for such projects should be based upon Bay improvement impact and upon the ratio of benefit to cost.

The funding for these activities should be distributed among Federal, State, and local government as well as from private developers involved in the North Bay area. Increased recreational uses of the Bay, particularly in the vicinity of causeways, are desirable, but any new access to it and/or development should be examined for the extent of environmental impact on the Bay. There should be, above all, respect for the integrity of the Bay.

## II. Utilization

How should the Bay be utilized?

Compartmentalization of the Bay's use would be difficult to legislate and harder still to implement. While there is no urgent need at the present time to designate separate areas for specific activities, increased activities in the Bay in the future may require use designation and regulation for safety, if for no other reason. Ultimately, some form of master use plan for the entire Bay will become necessary. Some additional restrictions on power boat activities in designated areas may be desirable as operating regulations at the present time, e.g., in regard to designation of waterskiing zones, and shallow areas, coves or other protected areas more suitable for non-powered vessels and/or swimming.

Also, present governmental action might include a greater emphasis on education in regard to water safety and small boat handling, but not toward the establishment of use priorities.

Additional public access to the Bay should be carefully planned. While it is desirable for as much shoreline as possible to be held in public ownership, safety and environmental consideration limit the extent to which such lands should be used for unlimited public access.

The criteria for new access should be, first, preservation of the resource; second, the ability to manage the public inflow at the point in question; and third, the overall impact of such new or additional public use of the Bay.

Because of its limited quantity, public waterfront property should be generally restricted to use directly related to water activities with the exception of joint uses such as marinas and picnic areas.

Non-water related public recreational activities, such as golf courses, can be located elsewhere.

The Bay is a community resource. Therefore, private interests seeking to develop the bayfront itself should not be able to limit public access to the water's edge. However, private developers should be encouraged to leave the shoreline in its natural state as much as possible with neither public nor private access. Appropriate techniques include scenic drives between shoreline and development and buffer areas remaining in their natural state between the water and the development. Utilization of the master plan, zoning, and other accepted land control techniques should be employed in this regard. Redevelopment in the future, particularly in the North Bay area, should also be included.

Appropriate zoning standards on height, density, use, and spacing should be strictly maintained and enforced regardless of increasing waterfront land costs.

The owners of currently undeveloped shoreline property should be encouraged whenever appropriate to establish a "vegetative zone" between the area of proposed development and the "mean high water" line. Some incentive in the form of tax relief or zoning "trade-offs", such as modified yard requirements, may be necessary and should be considered.

There will always be some activities, usually commercial, which will require direct shore edge construction or development. These uses should be limited to those situations with a clear "need for access" such as boat yard, marina, or yacht club. Limitation of water's edge use does not mean a restriction on access or view. Again, it is the maintenance of the integrity of the Bay system which must be stressed.

### III. Bay Management

How do we achieve a uniform and effective vehicle for carrying out our concerns in regard to Biscayne Bay?

Our four groups divided into two discrete and distinct camps. I cannot synthesize under these conditions so let me give you each point of view.

### Affirmative

There is a need to create a unified Biscayne Bay Authority (similar to the San Francisco Bay Authority) with responsibility for such things as coordinating research, creation of a master plan for the Bay, filling and other Bay activities, pollution control, and dissemination of information.

This authority would be a creature of state legislation either directly or through an enabling act to Metropolitan Dade County for its creation by Metro. It would in some ways be similar to the South Florida Regional Planning Council but limited to Biscayne Bay.

A group of informed and concerned citizens, perhaps emanating from this conference, should provide the nucleus toward the creation of such an authority. It could seek initial funds or seed money toward the creation of such a body from concerned units or agencies such as Sea Grant or the Coastal Council or from the State. Without a separate agency with clear power and authority as well as responsibility concerning Biscayne Bay, nothing definitive can be accomplished.

### Negative

Another layer of government is neither appropriate nor required. There are acceptable and equally effective alternatives to a new governing body:

One is to develop a kind of clearing house to ease permitting and/or coordinate permitting regulations and coordinate various levels in government in carrying out the regulatory activities.

The second alternative is to create intergovernmental committees of different levels in Federal, State, and County, to seek a unified approach to Biscayne Bay.

The third is to set up some kind of intergovernmental authority composed of representatives of these different levels, and the idea here was to agree on a single management plan among the different levels.

The fourth alternative is the coastal zone management plan which would incorporate all levels of government.

These groups suggested as a first step the convening of a planners' meeting involving county and appropriate city planning agencies from Dade County, representatives of coastal zone management and of the South Florida Regional Planning Council to initiate the creation of an advisory and coordinating authority.

It would fall on Dade County to take the initiative and convene the meeting.

All groups agreed that, regardless of approach, coordination of Bay preservation and restoration was imperative and urgent. It was also agreed that a sincere and tangible demonstration by local agencies of coordinated effort and desire to address and correct the problems of Biscayne Bay would trigger financial support, upon proper application, from Federal and State agencies having legislative mandates in the subject area.

Control of the tributaries which enter the Bay in regard to Bay pollution was also a question with divided opinion. All agreed that tributaries required effective pollution control. However, there was a difference as to leaving control under Metropolitan Dade County or a new authority.

In the area of growth, all groups agreed that unlimited growth of Bay use is not compatible with a social and environmental policy of managed growth designed to preclude destruction of the Bay.

There were divergent views on the limitation of population growth in Dade County as a necessary feature of Bay preservation and management. Two groups felt that there was no direct relationship between County population limitations and the problems of Bay management. Two other groups held that growth limitation should be a part of any management plan. They cited the decision of the Petaluma case in California on which the U.S. Supreme Court recently denied certiorari as an apparent basis for the legality of municipal growth limitation. Another factor cited by this view was the question of water availability. The South Florida Flood Control District will complete a study of water supply available in South Florida at the end of 1976, and this study will be pertinent to any discussion of growth limitation in South Florida since water is one of the major limiting growth factors in South Florida.

In the long range, a Biscayne Bay master plan similar to a land use plan is both feasible and desirable. It may be that a joint effort in this regard starting with the planning conference suggested above might be eligible for partial funding through coastal zone management sources. Such a plan will probably differ from the traditional land use map, however, with a greater emphasis on policy than on use distinctions.

In conclusion, there is consensus among the groups that action on a coordinating unit or authority should emerge from these deliberations and the

momentum gained in this direction should not be lost.

Several suggestions were advanced as to the next step, but four seemed to predominate.

1. Dade County should be the principal governmental authority to take the initiative in regard to the foregoing activities of coordination.

2. The University of Miami Sea Grant program should continue to work with the County and other agencies in this regard.

3. Each participant should receive a copy of this report as well as members of the Dade legislative delegation and other appropriate government offices.

4. That the participants in this Conference be kept advised as to the progress being made toward implementation of these findings.

# Address

BY NATHANIEL P. REED  
Assistant Secretary for Fish and Wildlife and Parks  
Department of the Interior

(Remarks made at closing banquet of  
Biscayne Bay Symposium II, University of Miami, April 10, 1976)

That indomitable lady, Polly Redford, called to say, "We have an oil refinery battle on our hands!" That was my first blush with Sea Dade and D. K. Ludwig. Out of that fascinating battle, the Florida environmental movement took a giant step forward from adolescence to adulthood. Up to that time conservationists really did wear tennis shoes and clutch field glasses.

But in the Sea Dade battle, the troops were mobilized, the press was captivated, competent lawyers were motivated and people were challenged to face certain facts of life. Dade Countians had the use of a great bay, a most extraordinary body of water lying close to a major metropolitan area. Did they want to sacrifice this bay for the income of the refinery?

Polly was determined that the bay would someday be protected by the Park Service as a National Monument. Her belief attracted a body of workers who all had that starry-eyed look of "the true believers." In 1966, I made a reconnaissance of the bay and the mystical kingdom of Islandia, not as a pathfinder, but as an ardent permit fisherman. I took home nary a permit but assumed the star gaze of the true believer.

When Claude Kirk was elected Governor, and I joined his staff, as Natural Resources Advisor, my moment of truth arrived. The Governor's Dade County campaign manager had persuaded the Governor during the campaign that by encouraging dredging and filling of the bay, a new Miami Beach would arise complete with casinos built without the niceties of a referendum. Obviously, the Mayor, the City Councilmen and land owners of the mystical kingdom of Islandia were thrilled.

The Miami Herald thought the bay more important, which further convinced the Governor to support a dredged causeway city, as he ran on an anti-newspaper platform. Likewise: the front page editorials of Bill Boggs,



Editor of The Miami News, championing the preservation of the bay, solidified the Governor's position as Bill had championed the Governor's opponent!

Following his election, the Governor introduced me, in great secrecy, to Mademoiselle X, his charming bride-to-be. After the inauguration they planned to spend a honeymoon sailing the keys. I was to chart out the route of nuptial joyage.

Now, all environmentalists worth their salt know that in all great battles there are two key factors which can spell the difference between success and failure, timing and nerve.

I rearranged the Governor's trip to include a visit to Key Largo and Biscayne Bay. I saw to it that a famous reef interpreter was available to dive with Mrs. Kirk. I assigned the most marvelous member of the Marine Patrol to drink with the Governor. Although Kirk went aground on a bar on Angelfish Creek, the trip was a huge success.

Shortly after his return to Tallahassee, I was summoned and given new orders: "Nobody is to screw up that bay!" and after he had a chance to think about it, he plaintively asked: "How do we preserve it?"

The hearings were a nightmare. The difficulty in obtaining the Fourth Cabinet vote is history. The hideous scenes, the Tallahassee intrigue, then the Congressional hearing process -- so slow as not to be believed by a young intemperate Nat Reed -- all bring back a rich tableau of memories. I met the Florida Congressional Delegation, worked with them and their staffs and learned to respect them.

I learned to work with the great field of players that are always involved in a difficult public decision.

To make a commitment in perpetuity is a difficult decision initially and then to maintain that commitment in a condition worthy of the initial act takes courage and infinite determination.

The struggle to guarantee Biscayne Bay's biological integrity led to the Florida Power and Light Turkey Point and the Dade County enforcement hearings.

I wear my scars as gracefully as possible, but I am, nevertheless, scarred from my encounters with the equally inflexible and determined men who did not share my enthusiasm for the preservation of a biologically sound bay.

The solution to the Turkey Point cooling problem, terribly expensive in terms of land and money, appears to be successful. Obviously, the recent news of radioactive material leaking from a storage tank at the plant gives all of us pause. But it will be many years before the verdict comes in on whether a nuclear power plant should be built next to a shallow, highly productive bay, requiring the destruction of hundreds of acres of mangrove forest for its cooling ponds.

I have interposed my personal narrative of Biscayne Bay, but in a real sense, the battles over Biscayne Bay were important milestones in my education.

The alliance with Polly and Jim Redford was very meaningful. Polly died victorious -- death could not have been proud to have claimed that extraordinary lady. And as a Director of the Miami International Airport found out later when the Big Cypress Jetport issue flared -- pith helmets, tennis shoes, even butterfly nets, yes -- but the modern environmentalists of Florida are determined, battle-tough and well versed in the code of arms, and blink at rules of the Marquis of Queensberry. They know the answers, have developed friends in powerful places, and often don't take prisoners. If Biscayne Bay is to be preserved, I suspect those attributes will be used in a long suit.

But what of Biscayne Bay today? What does it demand of us, who fancy ourselves its keepers?

We have some excellent clues, beginning with what systems people call its "emergent properties" -- which is just a two-bit term that reminds us (to paraphrase Joyce Kilmer) that "only the system can make a bay."

Take a 300,000-acre basin full of hydrogen and oxygen atoms and try to extrapolate Biscayne National Monument from it. You very soon arrive at the proper state of humility for managing such a resource. It becomes clear that we are dealing with a powerful, complex, fragile yet tough set of interlocking systems, and that we are the lucky recipients of a natural gift we could never duplicate on our own. Having recognized this treasure, we immediately inherit all the dire and awesome responsibility that has accompanied knowledge ever since Eve took her first bite back in Eden.

First, we see that there are no sharp boundaries to our problem. The systems that formed and support Biscayne Bay contain no sharper delineation than an ecotone -- the transition area between two adjacent ecological

communities. We cannot build sharp walls and will that development and exploitation shall hold sway on one side, preservation on the other. The systems rule otherwise.

An ecotone is a twilight zone where competing forces from two communities work out their differences with all the energy and efficiency they can command.

When people enter this battle zone, we need to come armed with every shred of awareness we possess. We need to use well all the knowledge we have accumulated, and for openers, one of the most useful things we know is that the bay is the product of the larger community out from it -- in particular, the uplands, but including all the externalities that bear upon the bay.

If the outside stresses had to be lumped under one loose heading, that heading would have to be "people." The same inexorable systems that shaped the pristine bay are still at work -- only now they are adding people to the South Florida system. Dade County is a product of the larger set of systems just as surely as is Biscayne Bay.

One of the attractions that continues to draw people here is the image of clean, warm beauty, projected to the rest of the United States as the unique South Florida system of air and water and sun. The image already is blurred. How much longer it can attract rather than repel is up to the leadership of Dade County.

Miami/Dade will still grow. It is not yet clear whether in retrospect we will look back and say "it grew some," or "it is gruesome." What is apparent is the need to assemble and put to energetic use all the knowledge we can pool if we are to continue coupling more people to the natural systems in which Biscayne Bay is embedded without further stressing those systems.

The problems are formidable, and the forces aggravating them are as old and tough and ugly as greed and avarice and be-damned selfishness.

First, the science. Here at the University of Miami, and in the Rosenstiel School of Marine and Atmospheric Science, I think it is a commentary on research in general that there is more knowledge of the ocean hydrology and fish populations of the Bahamas and the hemisphere's marine mammals than there is of the bay which lies at the school's entrance. Since nobody paid to find out what systems, forces, and beasties are out in Biscayne Bay, the Miami academic community lived in the dark for years. Although your collective craniums may hold many of the answers we need, and even more important, the

correct questions that will point further research in rewarding directions, I wonder if the maturity has come so the school will protect its own back yard.

Asking the right questions, and recognizing the correct answers when they present themselves, calls for wisdom born of hardwon knowledge, and that resource is here in our midst, if it can only be galvanized and electrified.

Obviously, this brain pool must be primed -- with money! But I will have more to say later about this still imperfect product of our human systems -- the work it can do and the sources from which it must come.

The second strength is the plan. Local zoning laws, the Dade County master comprehensive land use plan -- these are excellent strokes toward forging a rewarding partnership of man and nature in South Florida. Laws and plans must be firm enough to do the job, yet flexible enough to accommodate new questions and answers as they emerge from scientific research.

The plan must grow with the systems of man and nature. As we acquire a better data base of the bay's renewable resources -- as we catalog the changes that are taking place -- and as we quantify the significance of these changes -- our plans must reflect our growing grasp of the situation.

The third element for victory you have in place -- the troops!

The environmental activists, bless them all, are the Paul Reveres who ride out from conferences like this and spread the word, hopefully the right word! It's important that the bearers of warnings read the signals correctly and carry the right news. There is nothing more destructive to the environmental cause than inaccuracy and hearsay.

The message beaming out from the systems that make up and surround Biscayne Bay is telling us that much of what we value and want to keep is in trouble. Although one-third of the bay now lies within the boundaries of Biscayne National Monument and is owned by the Federal Government, and both Dade County and the State of Florida have taken positive steps through legislation to declare all of the South Bay area an aquatic preserve, there are signs of stress in evidence. Our data pool is beginning to increase, but we still lack the specifics for a number of special regulations such as harvesting bait fish and bait shrimp, sponging, lobstering, stone crabbing, and spear fishing. What the data does tell us is that who controls the shoreline and interior lands is far and away more crucial than who owns the bay.

Originally, only one main tributary, the Miami River, flowed into the bay from Dade County. All other freshwater reached the bay through the transverse glades during flood season, or by coastal seepage.

Historically, many fresh water springs boiled up from the bottom of the bay itself. Today, of course, canals direct large surges of runoff rapidly into the bay. Fresh water no longer has a chance to blend slowly with salt water among the mangroves, but moves quickly from farmlands, from city streets, and from sewers and industrial outfalls into the bay.

Not only do these large pulses upset natural bay ecosystems, but the impurities and pollutants gathered along the way contaminate the water and endanger marine animals. Already North Biscayne Bay has lost much of its natural diversity and productivity. Unless water quality is controlled and improved, the rest of Biscayne Bay will suffer a similar loss of its unique natural qualities. An indicator for the future is the present condition of most of the canals emptying into the bay -- they are generally considered unsafe for swimming.

Increasing recreational use of Biscayne Bay and the organization of the adjacent shorelines can only add to the stress on the entire ecosystem and the eventual loss of the single greatest recreational resource available to the 1½ million residents of the immediate metropolitan area.

I personally believe that we now know, and have long known, what steps must be implemented to stop any further deterioration of the bay and even to restore a portion of it. These are some of the major actions required:

1. First and foremost is to summarize and integrate from a whole systems standpoint our existing knowledge about the system. I think if this is done many will be surprised at how much information is already around that can be put to further use in managing this great system. This synthesis will also serve to indicate just where the significant data voids are and determine future research priorities.

2. Stop development of the mangrove shoreline and limit development in the vital marshes behind it.

3. Prevent construction of additional canals into the bay.

4. Control the dimensions, numbers, and placement of access channels into the bay.

5. Improve the quality and smooth out the flow mechanisms of all water entering the bay from canals.

The route to this forthright set of objectives is fraught with complexity and controversy. However, if we are to continue to enjoy Biscayne Bay, we have no alternative but to thread our way through it.

Biscayne Bay's shoreline has naturally attracted urban development. A particularly unfortunate prelude to this development has been the gouging out of mangroves and other shoreline vegetation by dredging, filling, and bulkheading. This has destroyed an essential zone of productivity and created in its place, residential property, thus stressing rather than strengthening the natural shoreline systems, and making them tragically vulnerable to storm tides.

The Environmental Protection Agency and the Army Corps of Engineers have picked up a variety of new authority over the marsh and mangrove swamps, formerly beyond both State and Federal control. I am confident that the public will support stringent rules and enforcement if they know what is at stake.

An urban and industrial development expand southward in Dade County, uniquely diverse biologically productive estuarine areas and nursery grounds in Biscayne Bay recede. Reasons for this are numerous, some avoidable, others not. Mangroves must be preserved. Channels can be better marked so as to avoid power boat damage to shallow grass beds. New marinas and boating facilities can be located in areas least sensitive to the modifications necessary. Access facilities in the vicinity of South Biscayne Bay can be designed exclusively for the types of craft suitable for use in the shallow grassy bay bottoms environment.

One problem which defies easy solution is cleanup of the primary drainage canal system, which systematically discharges slugs of stagnant water, laden with anaerobic sludge, into Biscayne Bay. The sludge accumulates in canal bottoms as a steady input of urban and agricultural runoff.

It is laced with insecticides, herbicides, fertilizers, and animal excrement washed from lawns, gardens, and parks; oil and grease from automobiles, airport service areas, service stations, garages and junk yards; chemical products from auto washing, laundries and industry; and a miscellany of other garbage, trash, and refuse. Add to this the pollutants from septic tanks, sumps and landfills that ride in on ground-water flow and you have a giant canal system collecting the composite poisons from everywhere and delivering them directly into the bay.

Some encouraging actions toward restoring water quality include upgrading of the Virginia Key sewage treatment plant and the start of construction on the North County area sewage treatment plant at the Interama site. It seems just like yesterday when I negotiated both agreements.

I understand that Dade County master planners are turning aerial photos of the bayshore into freehand drawings from which they will develop legal descriptions of a line which will mark the limits of allowable development. Behind that line, will be the zones of least development, and density will be allowed to increase only as distance from the line increases. These are all commendable steps in a new and better direction.

All this action to protect the South Bay must, however, be coupled with more than mere acknowledgment of past mistakes. Atonement is also called for. I have long believed in a restoration plan for North Biscayne Bay. The Estuarine Protection Act of 1970 (P.L. 90-454) recognizes restoration as a legitimate pursuit for estuaries with problems, but after passage of the Act, the Congress did not elect to fund comprehensive studies that would lead to restoration activities.

If the Estuarine Protection Act is to be implemented and have meaning, as surely was intended when Congress passed it, the Congress is going to have to provide the wherewithal to make it work. But why shouldn't Florida pay for all of it? North Biscayne Bay would make a great model restoration pilot project that could be financed by a local bond issue. To carry it out, the expertise in this room could develop plans that recreate shallow water habitat conducive to the growth of submerged aquatic vegetation. This in turn would act to settle turbid waters, clarify the bay, and allow even greater areas to be vegetated.

One of the most important corrective actions may be to upgrade the existing causeways by providing more openings to improve water circulation.

We need to consider refilling certain very deep borrow areas, channels and dead-end canals, to restore their natural productivity. This type of planning may involve hydrographic modeling of existing conditions and testing of corrective measures to determine which yield the greatest benefit to the troubled North Bay system.

We need money to implement our resolves. We need money to feed into enclaves of scientific expertise -- to unlock the research and provide good grist for our plans and laws. And that money cannot come solely from the Feds. Much of it does, but Government is a tripartite arrangement -- Federal,

State, and Local, and a major share of the money that acts as an amplifier on your University resource must come in the form of local and regional support. Dade County citizens, who stand to benefit the most from a beautiful, productive bay, are going to have to dig into their pockets and help fund the needed studies to preserve this great resource.

When those who would make their homes in the systems, prevail over those who would only make their fortunes out of the systems, both the economy and the ecology will be winners.

How many times must history repeat itself before we develop the brains -- the gumption -- to hook up our planning for the future with our knowledge of the past? That's not all shiny new unknown territory out there ahead of us in time and space. It's very much attached to what lies behind us, and we are building it -- here, today!

Let nothing I have said here be taken as minimizing the present effort in Florida with regard to bay planning and management. At the State level, the Legislature has recognized Biscayne Bay as a resource to be managed, and has set forth a number of specific requirements. At the local level, Metropolitan Dade County has, by ordinance, declared Biscayne Bay an "aquatic park" and is proceeding with studies needed to weigh the many alternative land and water uses and their impacts.

This is as it should be -- local government leading the way. Metropolitan Dade County now has the opportunity to do just that, by continuing to implement the comprehensive development master plan.

Historically, the Federal Government has served in Dade County as the Court of Last Appeal, as it has in the Biscayne Bay case where it created the National Monument. While the Federal Government may often be cursed for its interference and excessive bureaucracy, certainly Dade County as a whole has benefited. County Government would do well now to play a decisive role in protecting one of its most precious assets.

I congratulate the University, Dean Man, Dean Wooster, and others who put this conference together. I know you have all worked hard at this conference and yet you will continue to move ahead from the recommendations that have emerged here. I encourage you to provide the Department, EPA, the Corps of Engineers, and the State and Local leaders with the fruits of your thinking and research, and look forward to innovative proposals which will help us decide not whether, but how to implement actions that preserve and restore the bay.



In conclusion, I would like to quote from the Dade County comprehensive master plan its assessment of the bay:

"Biscayne Bay, with its unique coastline, is the priceless heritage not of a few but of all the people; as such, its availability, its accessibility, to all the people, must be assured; and above all its quality and beauty protected and maintained."

As words to march by, I know of no way to improve on that statement.

## Workshop Questions

First Session: Friday, April 9, 1976 7:45 p.m.

### I. ENVIRONMENTAL QUALITY

#### A. Water

1. In the Aquatic Preserve area, proposed State rules for marina construction approval would require pumpout facilities.

(a) Is this a reasonable and enforceable regulation for all future marine facilities, and should regulation of discharges from boats be extended to the open waters of the Preserve?

(b) Should County regulations ever be more restrictive than State or Federal rules?

2. In view of current trends toward stricter regulation of allowable discharges into the Bay and its tributaries, are we in danger of stifling the business sector (both industrial and residential) by prohibitively raising the cost of goods and services? Is this an acceptable price to pay for preserving the water quality of the Bay? Are there any alternatives?

3. Runoff of fertilizers and pesticides into South Bay is considered by some to be an important pollution problem. Is there any practical way to reduce or control runoff and still preserve the agricultural industry in Dade County?

#### B. Biota

1. Knowing that the monetary impact of commercial fisheries in Biscayne Bay is relatively small compared to that of recreational fishing, is it desirable to reserve the Bay exclusively for sport fishing, or a combination of sport and commercial baitfishing?

2. As one recent investigation has shown, lowering the water table from Everglades drainage and from agriculture and mosquito control ditches has significantly increased the area occupied by mangroves in South Bay.

Should such areas of induced mangrove growth be considered as part of the natural mangrove system and so managed, or should they remain under private control of those who own the land?

3. Should there be uniform regulation of the use of all sections of the Bay or should each area be considered separately for its utilization? For example, restrict the use of part of the Bay to recreational fishing, or as suggested in the Bilhorn Report, consider North Biscayne Bay usage separately from that south of Rickenbacker Causeway.

#### C. Shore and Bay Bottom

1. As a result of recent development with transplanting sea grasses, mangroves or other vegetation it appears feasible to consider restoring portions of the Bay's edge or bottom.

(a) To date, most efforts have concentrated on preservation and abatement; should we not now apply our attention and resources to restoring parts of North Bay, even if more costly?

(b) Who should pay? State, local or federal government, or private enterprise such as developers who disturb the natural state?

(c) Where should these efforts specifically be focused?

2. The Bilhorn Report suggests the use of areas around existing causeways (e.g., the Julia Tuttle) or the construction of island beaches for recreational purposes. Should such improvements designed to enhance recreational uses of the Bay be permitted in view of possible ecological disturbance?

Second Session: Saturday, April 10, 1976 10:00 a.m.

## II. UTILIZATION

### A. Public Development

1. Should the entire Bay be open to all recreational uses, or should sections be established for specific use such as water skiing, fishing, swimming or boating? Is it reasonable to limit areas for power boating vs. for canoes or sailboating?

2. Should shoreline land within the County continue to be dedicated to increased access to the Bay and additional recreational facilities in view of other demands for the utilization of limited shore and water areas (as for residential development or even for natural habitats)?

3. Among recreational uses of land on the water's edge, should the County consider establishing priorities between boaters, swimmers or sports-fishermen? Should any portion be allotted to non-water uses, such as picnicking or golf?

## B. Private Development

1. Should provision for public access be a requirement for development of private lands (as in the San Francisco Bay area)?
2. Considering the high cost of bayfront property for residential development, should it be regulated as to building height, density, spacing, or any combination of these? Should aesthetic or environmental values be balanced against economic factors of utilization?
3. Is it feasible in currently undeveloped shoreline property to require all developers to provide a "vegetative zone" between the developed property line and the legally defined "mean high water" line?
4. Should shore edge construction or development be limited to those activities which require waterfront access? If so, how is the need for waterfront access to be defined?

Third Session: Saturday, April 10, 1976 1:30 p.m.

## III. MANAGEMENT

### A. Jurisdiction

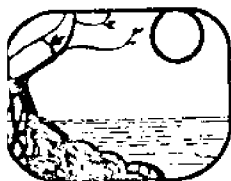
1. Should there be an effort to create a unified Biscayne Bay Authority or a new governmental entity to coordinate the multifaceted needs for regulation of the Bay (as in San Francisco)? What form should the Authority or entity take?
2. Should regulations concerning the Bay be extended to include pollution which enters tributaries of the Bay? Should a separate regional water authority be created to deal with pollution which enters the Bay waters from these other sources?

### B. Planning

1. Current thinking assumes an increasing use of the Bay for recreational purposes as the population of the area grows.
  - (a) Is a policy of unlimited growth of use of the Bay compatible with the fragile ecology of a subtropical lagoon?
  - (b) Is limitation of future population in Dade County a necessary feature of Bay preservation and management?
2. Is it feasible to develop a Biscayne Bay Master Plan (considering the many governmental jurisdictions involved) such as has been done for land use in Dade County?

3. After reading and hearing the conclusions and recommendations of the authors and speakers of Symposium I, are there one or two major areas of policy decision, including additional research, which you can agree should be given top priority in the future management of Biscayne Bay?

# BISCAYNE BAY SYMPOSIUM II



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Marine Science Center, RSMAS

April 9-10, 1976

Friday, April 9, 1976

Dr. David Cartano, co-chairperson  
Dr. Thomas A. Clingan, Jr.,  
co-chairperson

- 5:15 p.m. Registration and Get-Aquainted, wine and cheese, Marine Science Center Dining Room
- 6:00 Buffet dinner in Marine Science Center Dining Room  
Welcome: Dr. Warren Wooster, Dean of RSMAS, Co-general Chairperson  
Symposium Methods and Objectives: Dr. Eugene H. Man, Dean of Research Coordination; Director of Sea Grant, Co-general Chairperson
- 7:45 First Workshop Session  
Workshop A: Dr. Wooster, moderator; Ms. Jean Yehle, RSMAS Information Officer, rapporteur. Room 365.  
Workshop B: Ms. Susan Uhl Wilson, Commissioner, Florida Department of Environmental Regulation, moderator; Mr. George Volsky, New York Times, rapporteur. Room 329.  
Workshop C: Ms. Juanita Greene, Editorial Board, Miami Herald, moderator  
Ms. Jane Rieker, People Magazine, rapporteur, Room 343  
Workshop D: Mr. Thomas Buchanan, U.S. Geological Survey, moderator;  
Mr. Dick Holland, The Miami News, rapporteur. Private Dining Room.
- 9:45 Adjournment

Saturday, April 10, 1976

- 9:30 a.m. Coffee and danish, Marine Science Center Dining Room
- 10:00 a.m. Second Workshop session
- 12:15 p.m. Buffet luncheon in Marine Science Center dining room
- 1:30 p.m. Third Workshop
- 4:00 p.m. Social Hour, Marine Science Center Dining Room
- 5:30 p.m. Closing Banquet, Marine Science Center dining room
- Presiding: Dr. Eugene H. Man  
Greetings: Dr. Henry King Stanford, President of the University of Miami  
Address: The Honorable Nathaniel P. Reed, Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of Interior.  
Symposium Summation: Dr. Carl E.B. McKenry, Special Assistant to the President for External Affairs
- 7:30 p.m. Adjournment

