Proceedings of the Sixth Symposium on Coastal and Ocean Management

The Omni Hotel
Charleston, South Carolina
July 11–14, 1989

Edited by Orville T. Magoon, Hugh Converse, Dallas Miner, L. Thomas Tobin, and Delores Clark

Sponsors and Affiliates

American Fishing Tackle Manufacturers Association
American Petroleum Institute
American Shore and Beach Preservation Association
American Society for Environmental Education
American Society of Civil Engineers
Association of State Wetland Managers, Inc.
California Coastal Commission
California Dept. of Boating and Waterways
California State Lands Commission
Coastal States Organization
Coastal Zone Foundation
Guenoc Winery
Izaak Walton League of America
Japanese Association for Coastal Zone Studies
National Ocean Industries Association
National Wildlife Federation
N.C. Coastal Zone Management Program
N.C. Marine Research and Development Crescent
San Francisco Bay Conservation & Development Commission

S.C. Coastal Council
SEANET
Sierra Club
Society of American Military Engineers
Sport Fishing Institute
The Coastal Society
The Oceanic Society
The Urban Land Institute
Thousand Friends of Florida
United Nations Environment Programme
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Department of Commerce, NOAA
National Environmental Satellite, Data, and Information Service
National Marine Fisheries Service
National Ocean Service
Office of Sea Grant
U.S. Department of the Interior
Fish and Wildlife Service
Geological Survey
Minerals Management Service
Park Service
U.S. Environmental Protection Agency
U.S. Department of Transportation
Maritime Administration
### SESSION 49: BARRIER ISLANDS II: MAINE TO NORTH CAROLINA

- Management Concerns Associated with the Formation of a New Inlet in Chatham, Massachusetts
  - Jeffrey R. Benoit
- Sediment Transport Processes at Sandbridge, Virginia
  - Suzette M. Kimball and L.D. Wright
- Shoreline Response of Northern New Jersey Barrier System
  - Laurel T. Gorman and David W. Reed
- A Cast Study of Ebb Tidal Delta Equilibrium—Ocean City, Maryland
  - Steven G. Underwood and Fred J. Anders
- Formation of Beach Ridge Barriers Along an Indented Coast—Buzzards Bay, Massachusetts
  - Duncan M. FitzGerald, Noor Azim Ibrahim, and Stanley M. Humphries
- The Coastal Breach at Nauset Beach, Chatham, Massachusetts—A Case Study
  - Franklin W. Fessenden and Susan C. Scott
- Historic and Dredging-Induced Shoreline Changes, Bald Head Island, Cape Fear, North Carolina
  - William J. Cleary, Paul E. Hosier, and Steven Gammill
- Modeling the Tidal Inlet Potential of a Barrier Beach-Estuary System
  - David G. Aubrey, Graham S. Giese, Carl T. Friedrichs, and James T. Liu
- Origin and Holocene Evolution of Swash-Aligned Barriers in Midcoastal Maine
  - L. Kenneth Fink, Jr. and Duncan M. FitzGerald
- Impacts of Tidal Inlet Formation on the Physical Characteristics of a Barrier Beach-Estuary System
  - Graham S. Giese, James T. Liu, and David G. Aubrey

### SESSION 50: EFFECTIVE HABITAT MANAGEMENT, FOCUSING ON CORAL REEFS

- Fish Traps in the Coral Reefs of South Florida
  - Stephen V. Cofer-Shabica
- A Community-based Coral Reef Protection Strategy for Phuket Province, Thailand
  - Michelle H. Lemay and Hansa Chansang
- The Potential Effects of Global Climatic Disruption on Coral Reef Ecosystems
  - Robert T. Lester
- Rehabilitation of Degraded Coral Reefs
  - Jeremy Woodley and John R. Clark
- Benefits from Coral Reef Protection—Looe Key Reef, Florida
  - John R. Clark, Billy Causey, and James A. Bohnsack

*Manuscript not available at the time of printing.*
World Inventory of Coral Reef Environments (WICRE)—A Strategy for International Collaboration
John W. McManus .......................................................... 4936

Overfishing on a Philippine Coral Reef—A Glimpse into the Future
A.G.C. del Norte, C.L. Nanola, John W. McManus, R.B. Reyes, W.L. Campos,
and J.B.P. Cabansag ................................................... 3087

Coralline Resources of Lingayen Gulf, Philippines—A Proposal for their Management
Liana Talaue McManus ............................................... 3098

SESSION 51: PUBLIC ACCESS

Public Access—The Conservation Easement Option
Jeremy P. Ansell, Dennis L. Soden, and James P. Vreeland ...................... 3108

Restoration and Development Guidelines for Ocean Beach Recreation Areas
Karst R. Hoogeboom ................................................................ 3120

Beach Access—Florida Plans for the Future
Paden E. Woodruff, III ................................................................ 3135

Development of an Intertidal Ramp—An Innovative Approach to Shoreline Access
Diane D. Althoff ................................................................ 3142

Public Beach Access Points Along the South Carolina Shore
Grant Cunningham, Nanci Bateman, and Cary McDonald ...................... 3153

Who Owns the Beach? Finding a Nexus Gets Complicated
Robert G. Collins and James McGrath ........................................ 3166

Water Access Needs in Southeastern Virginia
William P. Wickham and John M. Carlock ...................................... 3186

Nonresident Access to Beaches
David N. Kinsey .................................................................. *

Making the Nexus—Public Access Requirements Under Nollan
Steven Goldbeck .................................................................. *

Improvement of the Public Access to Urban Waterfront in Japan—Port Amenity Zone Improvement Program
Takasi Hashikawa, Satoshi Inoue, Koichi Miyake, and Kenji Horie .............. 3200

SESSION 52: COASTAL LAND USE PLANNING AND DEVELOPMENT:
GUIDELINES AND EXECUTION

Coastal Regulatory Reform in New Jersey
Edward J. Linky and Dr. W. Patrick Beaton ...................................... 3214

Land-Use Planning and Coastal Conservation in South Africa
Christo Marius Gaigher ................................................................ 3228

The Downstream Perspective on Basin-Wide Water Management in the
Apalachicola-Chattahoochee-Flint River Basin
Steve Leitman, F. Graham Lewis, and Rich McWilliams ...................... 3241

Coastal Land Use Management—An Allocative Model
David M. Chapman and John R. Ives ............................................ 3256

*Manuscript not available at the time of printing.
Shrimp Mariculture—A Viable Competitor for the Coastal Land Resources of the Southeastern USA
Bruce J. French, Linos Cotsapas, and Miles O. Hayes .................................................. 3272

The Construction of Homes on Four Active Coastal Landslides in Newport, Oregon—Unbelievable but True!
William O. Sayre and Paul D. Komar ................................................................. 3286

Beach Conservation Through Coastal Development Control in the East Caribbean Islands
Gillian Cambers .......................................................... 3297

Coastal Zone Resort Planning
J. Westby Slade and Gary M. Nemeth .......................................................... 3308

Urban Growth Management in Virginia Beach—A Case Study of Attempts to Protect the Rural Landscape of an Environmentally Sensitive Estuary
Roy B. Mann .......................................................... 3309

Arverne, New York—Planning for a New Coastal Community of 20,000 People
Barry Seymour .......................................................... 3310

Coastal Regulation on Martha’s Vineyard, Massachusetts
Melissa L. Waterman .......................................................... 3322

Seaside, Florida’s Development Plan and Urban Design Philosophy
Robert S. Davis .......................................................... *

SESSION 53: STRUCTURES: DESIGN, IMPACT EVALUATION, AND CASE HISTORIES

Design of a Hurricane Resistant Floating Breakwater for Charleston Harbor, South Carolina
Jack C. Cox .......................................................... 3332

Shore Morphology—An Element in Breakwater Design
C. Scott Hardaway, James R. Gunn, Gary L. Anderson, and Tracy Eanes Skrabal .......................................................... 3345

Estuarine Beach Processes and Protection Methods
Nancy L. Jackson and Karl F. Nordstrom .......................................................... 3360

Dynamic Stability of Dumped Riprap
John P. Ahrens and Martha S. Heimbaugh .......................................................... 3377

Navarre Navigation Project—Designing an Inlet for No Net Impact to Adjacent Shorelines
Kevin R. Bodge and Erik J. Olsen .......................................................... 3390

The Environmental Impact of Coastal Protection Works
Jose-Maria Berenguer Perez and Javier Enriquez Fernandez .......................................................... *

A New Wave on the Horizon—Towards Building Surfing Reefs Nearshore
Thomas P. Pratte, James R. Walker, Peter E. Gadd, and Craig B. Leidersdorf .......................................................... 3403

Evaluation of Coastal Structures Under 100-Year Event
S. Jonathan Siah .......................................................... 3412

Artificial Structures Along Italian Shorelines
Giuseppe Matteotti .......................................................... *

Fundamentals of Effective Coastal Revetment Design
David M. Vick .......................................................... 3422

*Manuscript not available at the time of printing.
SESSION 54: BARRIER ISLANDS III: MANAGEMENT ISSUES

Stabilization Attempts—Westhampton Beach, NY
John A. Black ............................................................... *

Scenarios for Land Use on Delaware Barrier Beaches
Jacob Henry Kahn ...................................................... *

New Directions in Research for Management of Our National Coastal and Marine Parks
James R. Allen .......................................................... *

Coastal Barrier Resources Act and the National Flood Insurance Program Six Years After
Frank Y. Tsai ............................................................ 3430

Protecting Undeveloped Barrier Islands—A Florida Case Study
Mark A. Benedict and Tina Bernd-Cohen ......................... *

Building on the Coastal Barrier Resources Act
Elise Jones ...............................................................

Coastal Barrier Island Management in Florida
George P. Schmahl and Douglas W. Heatwole .................. *

Coastal Barrier Resources Act Report to Congress
Mary C. Watzin and Frank B. McGilvrey ......................... *

SESSION 55: EXCLUSIVE ECONOMIC ZONE AND TERRITORIAL SEAS MANAGEMENT

Approaching a Federal-State Partnership for Ocean Mining
David W. Fischer ....................................................... 3441

Federal-State Revenue Sharing for Ocean Minerals Development—The Example of Outer Continental Shelf Lands Act Section 8(G)
Richard G. Hildreth .................................................. 3452

Alaskan EEZ—Vast Acreage, Unknown Potential
M.J. Hameedi ............................................................. *

Evolving Transportation Needs and Issues in the Bering Sea
Maureen McCrea ....................................................... *

The State Role in Managing the U.S. Exclusive Economic Zone
James W. Rote and Craig R. Denisoff ............................. 3468

A Comprehensive Analysis and Overview of Hawaii's Ocean Industries
Craig D. MacDonald and Howard E. Deese ..................... 3481

Maritime Boundaries in the Eastern Caribbean
David Freestone ....................................................... 3494

The Italian Seas—Legal Frameworks and Management Patterns
Adalberto Vallega ..................................................... *

SESSION 56: AESTHETIC, CULTURAL, AND HISTORICAL PERSPECTIVES

Japan—A Sea-Oriented Nation?
Harvey A. Shapiro .................................................... 3502

*Manuscript not available at the time of printing.
Protection of Historic Shipwrecks in State Waters
  Joan M. Bondareff ................................................. 3514
Archeology on the Federal Outer Continental Shelf
  Michele L. Hope .................................................... 3526
The Challenges of Preserving Our Nation's Lighthouses
  LCDR Geoffrey L. Abbott ....................................... 3531
Shipwreck Management and the CZMA
  David W. Kaiser .................................................. 3545
The Development of Lighthouse Structures
  LT Patrick Barnes ................................................ 3554
Environment Exploitation by Prehistorical Population of Rio de Janeiro
  Oswaldo Heredia, Cristina Tenorio, Maria Dulce Gaspar, and Maria Cristina Buarque..... *
Impact on a Primitive Fishing Community in Marica County, Caused by Urbanization
  Edna Maia Machado Guimaraes .................................*
Protecting New York's Scenic Coast
  Nancy K. Nugent and Thomas F. Hart, Jr. .......................... 3569
Historical Evolution of the Coastal Settlement in Italy—Ancient Times
  Stefano Torresani ................................................. *
Historical Evolution of the Coastal Settlement in Italy—Modern Times
  Achille Lodovisi .................................................. *

SESSION 57: MODELING

Simulating the Long-Term Impacts of Coastal Development and Landscape Changes on the Ecology of the Waccamaw River, SC
  Sharon S. Ring and Fred H. Sklar .................................. 3581
Weeks Bay Modeling—A Tool in the Coastal Zone
  Ashok Thollapalli, Gary C. April, Donald C. Raney, and William W. Schroeder .............. 3588
Chesapeake Bay Three Dimensional Model Study
  Carl F. Cerco ..................................................... 3601
Engineering Assessment of Proposed Bolsa Bay Development
  Steven A. Hughes .................................................. 3607
Modelling Estuarine Saltwater Intrusion
  John P. Grubert .................................................... 3619
Hybrid Model Use in Navigation Channel Design
  Tom Wakeman and Mark Dettle ..................................... 3634
A Simulation System for Analyzing the Effects of Highway Crossings on Estuarine Circulation and Transport—A Demonstration
  Jonathan K. Lee, Raymond W. Schaffraneck, and Robert A. Baltzer ......................... *
Landscape Forms for Wind Mitigation on Coastal Sites
  Louise M. Mudrak, Dr. Kim Mills, and Dr. Donald E. Ordway ................................. 3642
Ship Simulation Study of Pascagoula Harbor, Pascagoula, Mississippi
  J. Christopher Hewlett ........................................... *
Wando River Navigation Improvement Project, Charleston, South Carolina, Ship Simulation Study
  Rosalyn Hoangthi Nguyen, Samuel B. Heltzel, Larry Casbeer, and Carl J. Huval ........... *

*Manuscript not available at the time of printing.
Simulation of Ground-Water Flow in Coastal Southern New Jersey
Frederick J. Spitz and Dr. Thomas H. Barringer ........................................ 3651
Nonresident Access to Beaches
David N. Kinsey ......................................................................................... 3666
The Study of Tranquility Improvement in Marina by Numerical Computation Using
Mild-Slope-Equation
Kazuhiko Sakai, Noriyuki Satoh, and Diato Inoue ....................................... 3681

SESSION 58: MARINE SANCTUARIES AND ESTUARINE RESERVES:
WORKGROUNDS FOR MANAGING OUR COASTAL RESOURCES

Sustaining Eelgrass To Manage a Healthy Estuary
Frederick T. Short, Jaimie Wolf, and Galen E. Jones .................................... 3689
Seagrass Research in West Coast National Estuarine Research Reserves
Mark Alan Silberstein .................................................................................. 3707
Coral Reef Management Issues in the Florida Keys
Billy Causey ................................................................................................. *
Information Technology—A Key to Effective Marine Sanctuary Management
LC Dr Francesca M. Cava ............................................................................. 3712
Research and Resource Management in National Marine Sanctuaries and Estuarine
Research Reserves
William J. Thomas ...................................................................................... *

SESSION 59: COASTAL PROCESSES I

Changes Along a Seawall and Natural Beaches—Fourchon, Louisiana
Joann Mossa and Lindsay D. Nakashima ..................................................... 3723
Littoral Drift Along Some Beaches in Brazil
Otavio J. Sayao ............................................................................................ 3738
Island Formation, Growth and Impacts
COL William J. Reynolds ............................................................................. 3747
Is There a Relationship Between Pond Opening and Bluff Erosion on Nantucket Island,
Massachusetts?
Wesley N. Tiffney, Jr., and J. Clinton Andrews ........................................... 3760
Definition of Littoral Cells for Ontario’s Great Lakes Shorelines
Gregory M. Smith and Otavio J. Sayao ......................................................... 3773
Long-Term Erosion of Impacts of the 1982–83 El Nino on the Oregon Coast
Paul D. Komar and James W. Good ............................................................... 3785
Shallow Water Sand Transport by Ship Waves
Timothy Abbe and Karl W. Eriksen ............................................................... 3795
Shoreline Changes in Bolinas Bay
James McGrath .............................................................................................. *
Sediments and Beaches Evolution of Leixoes Harbour Surrounding (North of Portugal)
G. Soares De Carvalho and Helena Maria L.P. Granja .................................. 3809

*Manuscript not available at the time of printing.
SESSION 60: WATER QUALITY ANALYSIS: RESEARCH AND FINDINGS

Breakwater Filtration System Design for Swim Basin
D. Steven Graham, H. Richard Patterson, and Dr. N.K. Becker 3824

The Marine Chemical of Several Coastal Marine Fronts in the South Gulf of Mexico
Felipe Vazquez, Hector Alexander, Adriana Pena, and Antonio Frausto * 3856

Modeling Fresh Water Inflow to an Estuary
Daniel W. Utish and Jose G. de Meneses 3843

Management of Salinity Fluctuations in Estuarine Environments
Panagiotis D. Scarlatos, Richard S. Tomasello, and Robert H. Chamberlain 3856

Recommendations for Future Water Quality Programs in Volusia County, Florida
Kevin L. Erwin and Craig M. Smith 3866

Fate and Effects of PAH Leaching from Cresote-Treated Marine Pilings
Helder J. Costa and Michael J. Wade 3875

A Practical Approach for Assessing Metals Contamination in Coastal Sediments—An Example from Tampa Bay
Steven J. Schropp, Fred D. Calder, Louis C. Burney, and Herbert L. Windom 3889

Contaminant Concentrations in Bivalve Molluscs from the U.S. Coastal Atlantic and Pacific
Sandra T. Freitas and Paul D. Boehm 3901

Water-Quality Characteristics of the Hugh Taylor Birch State Recreation Area, Fort Lauderdale, FL
Robert J. Brock * 3916

Decreased Fluxes of Pb, Cu, and Zn from Elliott Bay
Anthony J. Paulson, Thomas P. Hubbard, Herbert C. Curl, Jr., Richard A. Feely, Timothy E. Sample, and Robert G. Swartz 3916

Heavy Metals Pollution Monitoring Through the Critical Pathways Analysis—The Sepetiba Bay Case
Olaf Malm, Wolfgang Christian Pfeiffer, Luiz Drude de Lacerda, Marlene Fiszman, and Neusa R.W. Lima * 3916

The Assimilative Capacity of Marine Waters
Herbert C. Curl, Jr. * 3916

Mortality of Amphipods in Toxicity Tests Conducted Using Different Flow Regimes
Jack Q. Word, Jeffrey A. Ward, Betsy Brown, Brian Walls, Sandy Lemlich, and Mike Carlin * 3916

SESSION 61: GEOTECHNICAL ADVANCES AND SOLUTIONS

Sidescan Sonar Examination of Deteriorated Revetments and Bulkheads along Chicago’s Lake Front
Michael J. Chrzastowski 3931

GEOCOSTA Operations—A Program of Oceanographic Expeditions for the Brazilian Inner Shelf
Dieter Muehe * 3931

The Peter W. Anderson—A Particularly Capable Platform
Jonathan E. Amson * 3931

*Manuscript not available at the time of printing.
Influences of Wave Steepness on Wave-Induced Liquefaction in Sand Layer
Yoshi-Hiko Maeno, Tetsuo Sakai, and Hajime Mase .................................................. 3945
The Fourth Alternative—Beach Stabilization by Beachface Dewatering
John W. Adams ............................................................................................................. 3958
Assessment of a Two-Layer Beach Fill at Corpus Christi Beach, TX
James M. Kieslich and Dewey H. Brunt, III ................................................................. 3975
DCM (Deep Cement Mixing) Works at Tianjin Port, China
Shigeru Nishioka, Hisashi Hosomi, and Tong Ming Zhang ....................................... *
Moundless Breakwater with Wide Footing on Soft Ground
Takeshi Monji and Toshirou Okamura ........................................................................ 3985
The Upton/Jones Amendment and Zone of Imminent Collapse
Michael K. Buckley and Perry E. Rhodes ..................................................................... 3999

SESSION 62: INSTITUTIONAL CONCERNS AND INTERAGENCY PLANNING AND COORDINATION

Conflict Resolution in Coastal Zone Management—The Effects of Environmental Values, Technical Information, and Knowledge Holding
Dennis L. Soden ............................................................................................................. 4010
Conflict Resolution—Techniques and Case Studies
Joseph E. Petrillo .......................................................................................................... *
Coastal Zone Management and the National Estuary Program—Why Both?
Ellen L. Gordon ........................................................................................................... 4022
Building Consensus on Land Use and the Chesapeake Bay
Richard C. Collins and Elizabeth B. Waters .............................................................. 4029
Federal Participation in Shore Protection Projects Changes Due to the Water Resources Development Act of 1986
Donald Barnes ............................................................................................................. *
Chesapeake Bay Communication Plans—Md., Va., Pa., and the District of Columbia Working Together
Helene Tenner ................................................................................................................ *
Implementing an Erosion Rate Setback—The North Carolina Experience
Melissa McCullough ..................................................................................................... *
Institutional Constraints to Coastal Zone Management in Hawaii—A Review and Critique
Chennat Gopalakrishnan and Jack R. Davidson ......................................................... 4036
International Developments in Ocean Incineration Policy
Daryl W. Ditz ................................................................................................................ 4041
Virginia’s Chesapeake Bay Preservation Act—History and Prospects for Success
Richard C. Collins and Timothy Beatley ..................................................................... *
A Federal Agency View of the Chesapeake Bay Program
Colonel Bernard E. Stalmann and Larry J. Lower ....................................................... *
Alternative Conflict Management Methods for Scientific and Technical Disputes in the East Everglades
Kathleen Shea Abrams ............................................................................................... *

*Manuscript not available at the time of printing.