



The 23rd International Conference of The Coastal Society Our Coasts, Our Heritage: Ecosystem Services for the Common Good

**June 3 - 6, 2012
Miami, Florida**

[WELCOME FROM TCS PRESIDENT](#)

[TCS 23 CONFERENCE ACKNOWLEDGEMENTS](#)

[TCS 23 CONFERENCE SPONSORS](#)

[TCS 23 CONFERENCE ORGANIZING COMMITTEE](#)

[TCS BOARD OF DIRECTORS AND PAST PRESIDENTS](#)

[TCS CONFERENCE PAST PROCEEDINGS](#)

[TCS CONFERENCE CONCURRENT SESSIONS](#)

Abstracts

[Preparing California for Its Future Coastline](#)

Adina Abeles, Center for Ocean Solutions

[Aquatic Vegetation, Ecosystem Services, and Management in a Great Lakes Estuary](#)

Ted Angradi, David Bolgrien, Brent Bellinger

United States Environmental Protection Agency, Office of Research and Development, Mid-Continent Ecology Division

[Ocean Frontiers Film & Discussion: Lessons Learned on Marine Spatial Planning and Ecosystem-Based Management](#)

Karen Anspacher-Meyer, Green Fire Productions

[Factors Affecting Local Permit Ownership in Bristol Bay, Alaska: An Analysis of Based on Interviews with Local Residents](#)

Breana Apgar-Kurtz, David Fluharty, Gunnar Knapp

School of Marine and Environmental Affairs, University of Washington

[Characterizing the Social Landscape and Land Cover of Barrier Island Communities](#)

Andrew Bennett, East Carolina University

[Tweet-Face; Using Social Media to Improve Ocean Stewardship](#)

Carli Bertrand, Coastal America

[The Rhode Island Ocean Special Area Management Plan: A Year in Review](#)

Dave Beutel, RI Coastal Resources Management Council

[Investigating Living Shorelines as a Form of Shoreline Protection in New Jersey](#)

Wes Bickford, Dorina Frizzera

New Jersey Department of Environmental Protection, Coastal Management Office

[Climate Adaptation and Shoreline Change in the Republic of the Marshall Islands](#)

Andy Bohlander, University of Hawaii Sea Grant College Program

[Municipal Responses to a Changing Climate in the Coastal Zone of the Northeast and Bay of Fundy](#)

Kristen Bonjour, Julia Wyman, Susan Farady

Marine Affairs Institute/Rhode Island Sea Grant Legal Program

[Variation in Cultural Knowledge of Coastal Hazards on Hatteras Island, NC](#)

James Brinkley, East Carolina University

[CZMA'S Lone Departure: The Alaska Coastal Management Program](#)

Liz Brown-Pickren

Coastal Resources Management Program, Institute for Coastal Policy and Science, East Carolina University

[Do Current Waste Control Initiatives Protect Ecosystem Services in Urban Waters?](#)

Richard Burroughs, University of Rhode Island

[Assessing the Vulnerability of West Coast Fisheries to a Changing Climate: Climate Impacts on The Pacific Whiting Fishery](#)

Kara Cardinal, University of Washington

[Beach Ecology Around the Nation: A Critical Look at State-Level Management](#)

Clara Cartwright, Surfrider Foundation

[Developing and Assessing Regulatory and Outreach Strategies for Preventing the Spread of Aquatic Invasive Species Through Boating](#)

Samuel Chan, Oregon State University

[Planning for Mysterious Change: The Challenge of Understanding and Shaping Societal Responses to Ocean Acidification](#)

Patrick Christie, University of Washington

[Lessons Learned About Sharing Ocean Space and Place for the Common Good](#)

Flaxen Conway, Oregon State University/Oregon Sea Grant

[NOAA's National Coastal Population Report](#)

Kristen Crossett, NOS, NOAA

[Improving Response Capacity to Non-Native Mussels in the West](#)

Carolynn S. Culver, California Sea Grant Extension Program

[International Trade in Spiny Dogfish and Fishery Management Aspects](#)

Andrea Dell'Apa, East Carolina University

[Coastal and Marine Spatial Planning Efforts: The Trade-Offs Between Statutory and Administrative Authority](#)

John Duff, University of Massachusetts Boston

[Working Waterfronts in Michigan: Analysis of Value, Vulnerability, and Sustainability](#)

Elizabeth Durfee

Michigan Coastal Management Program, Office of the Great Lakes, Department of Environmental Quality

[Working Waterfronts Initiatives in Alabama: Protecting Environmental, Economic and Cultural Resources](#)

Marie Dyson, Auburn University Marine Extension and Research Center/Sea Grant

Evaluation of Mitigation and Adaptation Strategies for Communities on the Delaware Bay in Response to Coastal & Climate Change Hazards

Steve Eberbach, Michael Baker, Jr., Inc.

A Social Network Analysis of NOAA's Regional Collaboration Initiative

Chris Ellis, NOAA Coastal Services Center

The New Ocean Order: What's Law Got to Do With It?

Susan Farady, Marine Affairs Institute, Rhode Island Sea Grant Legal Program

Smart Growth and Resilience to Hazards: Strategies to Promote Coastal Community Sustainability and Durability

Rebecca Feldman, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management

Wading In - Tackling Sea Level Rise in North Carolina: Risk Assessment, Communication, Adaptation Strategies, and Policy-Making

Rebecca Feldman, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management

Integrating Social Science into Ocean and Coastal Decision-Making and Governance: The Interagency Working Group on Ocean Social Science

Thomas E. Fish, Marilyn Buchholtz ten Brink, Chris Ellis
Cooperative Ecosystem Studies Units Network, U.S. Department of the Interior

Maryland's Ecosystem Enhancement Program - An Ecosystem Based Approach to Mitigation

Kristen Fleming, Maryland Department of Natural Resources

The Potential of Marine Citizenship to Mobilise Public Behaviour Change to Support Marine Ecosystem Services

Steve Fletcher, Centre for Marine and Coastal Policy Research, Plymouth University

Port Participation in a Regional Ocean Partnership: Lessons Learned from One Local Municipality's Experience with the West Coast Governors' Alliance on Ocean Health

Angie Fredrickson, Port of Long Beach

A Community-Based Framework for Identifying, Assessing, and Evaluating Ecosystem Services Provisioned By Marine Reserves in Oregon

Peter Freeman, Oregon State University

Sediment Characterization of the New Jersey Shoreline

Michael Flynn
The Richard Stockton College Coastal Research Center

Connecting the Dots in the Coastal Ocean with Comprehensive Ecosystem Assessments

Melissa Foley, Center for Ocean Solutions, Stanford University

Identifying the Boundaries of Coral Reef Conservation: A Contingent Valuation Study to Investigate the Effects of Perception of Scale and Magnitude of Reef Problems on Willingness-To-Pay for Fijian Reef Preservation Programs

Carolyn Fonseca, University of Georgia

The Value Of Eelgrass Zostera Marina In Puget Sound, WA. Stressor Abatement Through Improved Regulations and Policies Compared with Targets and Successes From Other Estuarine Systems

Heather Gibbs, Washington Department of Natural Resources

A Review of Contingent Valuation Methods for Wetland Goods and Services

Leigh Habegger, The Coastal Institute, University of Rhode Island

Sea-Level Rise Adaptation Planning for the City of Los Angeles, CA

Juliette Finzi Hart, University of Southern California Sea Grant

"Show Me the Money" Economics: National Ocean Watch Data for Ocean Management

Zac Hart, I.M. Systems Group, Inc., NOAA Coastal Services Center

[The Social Coast—It's Not Another Social Networking Site](#)

Zac Hart, I.M. Systems Group, Inc.

[Predictive Modeling of Groundfish Abundance in the New York Bight: A Tool for Marine Spatial Planning](#)

Zach Hecht-Leavitt

Division of Coastal Resources, New York Department of State

[Mapping the Future of Coastal and Ocean Observing in the Southeast](#)

Debra Hernandez, Southeast Coastal Ocean Observing Regional Association

[Assessing the Value of Recreation Trips in the Coastal Zone: An Application of Benefit Transfer](#)

Paul Hindsley, Eckerd College

[The Climate Adaptation Knowledge Exchange \(Cake\): Your Online Adaptation Destination](#)

Jennifer Hoffman, Jessica Hitt, Rachel Gregg, Lara Hansen

EcoAdapt

[Tools That Support Climate-Smart Coastal and Marine Planning, Conservation, and Restoration](#)

Jennifer Hoffman, EcoAdapt

[Barriers to Mitigating for Seagrass Loss in Florida](#)

Althea Hotaling, University of Florida

[An Assessment of the Effects of Pharmaceuticals and Personal Care Products on Marine Ecosystem Health](#)

Zakiya Hoyett, Michael Abazinge

School of the Environment, Florida Agricultural and Mechanical University

[Analyzing Potential Oil Spill Damages to Wetlands in Galveston Bay: A GIS-Centric Approach](#)

Hillary Huffer, East Carolina University

[A Comparison of Recreational and Commercial Fisherman on Perceptions of Management Measures on Striped Bass \(*Morone saxatilis*\) in The Albemarle Sound/Roanoke River](#)

C. S. Hughes, East Carolina University

[Planning for Erosion Mitigation in Matunuck: The Relevance of Coastal Processes and Climate Change](#)

Shannon Hulst, The Coastal Institute, University of Rhode Island

[The Roles and Involvement of Local Government Human Resource Professionals in Coastal Cities Emergency Planning](#)

Tanveer Islam, Stacey Mann

Department of Emergency Management, Jacksonville State University

[Coastal Climate Adaptation: Building the Puerto Rico Climate Change Council](#)

Kasey R. Jacobs, Puerto Rico Coastal Zone Management Program

[Increasing Resiliency to Coastal Hazards: Climate Adaptation and Coastal Resiliency Planning at the Port of Long Beach](#)

Thomas Jelenic, Port of Long Beach

[Preserving Ecosystem Services to Improve Human Well-Being at an Industrial Port Complex: Moving Beyond Traditional Approaches Mitigation at the Port of Long Beach](#)

Thomas Jelenic, Port of Long Beach

[Valuing Coastal Ecosystem Services in Florida](#)

Grace Johns, Hazen and Sawyer

[Building a Great Lakes Spatial Decision Support Toolbox to Address Comprehensive Plan Implementation and Coastal Hazards](#)

Kathy Johnson, Wisconsin Coastal Management Program

[Reducing Coastal Ecosystem Risks from Hull-Borne Invasive Species](#)

Leigh Johnson, University of California Cooperative Extension

The Economic Impact of Freshwater Inputs to an Estuarine Fishery
Chris Kennedy, George Mason University

MARACOOS into the 21st Century: Moving from Observing to Forecasting in Order to Save Lives, Protect Livelihoods, and Boost the Economy in the Mid-Atlantic
Gerhard Kuska, MARACOOS

Economic Values of Coastal Erosion Management
Craig Landry, East Carolina University

Fish Nursery Function of Ocean Surf-Zone Habitat: Response to a Human Disturbance Gradient
Tom Lankford, University of North Carolina Wilmington

Fish Utilization and Nursery Function of Ocean Surf-Zone Habitat: Short- and Long-Term Effects of Beach Renourishment.
Tom Lankford, Edward Arb, Adam Branson, Drew Howard
Department of Biology and Marine Biology, University of North Carolina Wilmington

Building Resilient Communities Using a Coastal Vulnerability Index - Comparing Edisto Beach and North Myrtle Beach, SC
Sarah A. Latshaw, Matt J. Slagel
South Carolina Department of Health and Environmental Control – Office of Ocean and Coastal Resource Management (SCDHEC-OCRM)

Coastal Management During a Time Of Unsettled Local Governance: a Chesapeake Bay Case Study
Lewie Lawrence, Middle Peninsula Planning District Commission

Coastal Watershed Restoration in the Great Lakes: Progress in the Ten Mile Creek/Ottawa River Watershed, Ohio
Patrick Lawrence, University of Toledo

Public Perceptions of Seawater Air Conditioning in Waikiki
Jonathan Lilley, University of Hawaii Sea Grant College Program

Defining Ecosystem Services: Insights from Marine and Estuarine Goal Setting for South Florida
David Loomis, Institute for Coastal Science and Policy, East Carolina University

Valuation of Ecosystem Services: Insights from Marine and Estuarine Goal Setting for South Florida
David Loomis, East Carolina University

We're Looking out for You: Using Indicators to Observe Social, Economic, and Environmental Conditions at Multiple Scales
Susan Lovelace, NOAA

Balanced Growth as a Sustainable Economic Development Strategy
Joe Lucente, Ohio State University Extension

Sustainable Floridians: A Statewide Volunteer Program in Pinellas County, FL
Ramona Madhosingh-Hector
University of Florida, Pinellas County Extension

Nonpoint Source Pollution from Coastal Bridges
Daniel Marcucci, East Carolina University

Sea-Level Rise Impact in Franklin County: Florida's Forgotten Coast
Ariana Marshall, Florida Agricultural and Mechanical University

The Evolution of Tidal Shoreline Management in Virginia: Adaptive Changes Promote Better Informed Decisions
Pam Mason, Center for Coastal Resources Management, College of William and Mary

Using Science, Engaging the Public: Investigating the Role of Science in Collaborative Marine Management
Meghan Massaua, University of Washington

The Restoration of the Mouth of the Housatonic River, Ct: One Point at a Time.
Jennifer Mattei, Sacred Heart University

Making Communication Make a Difference: Lessons from Social Marketing
Linda Maxson, Forterra

Implications of Plugging Grid Ditches in Mid-Atlantic Coastal Salt Marshes: Vegetation Changes, Mosquitoes, Carbon Sequestration, and Keeping Pace with Sea Level Rise
Erin McLaughlin, Maryland Department of Natural Resources

GIS Spatial Planning for an Offshore Wind Energy Transmission System
Sara Mochrie, Ecology and Environment, Inc.

Oregon's Digital Estuaries: Meeting the Challenges Of An Ever-Changing Coastal Planning Landscape
Cinamon Moffett
Oregon Coastal Management Program, Department of Land Conservation and Development

Evaluating Biological and Sociological Concerns in the Section 7 Process: Using Conservation Units to Protect Sturgeon Populations
Jolvan Morris, Florida Agricultural and Mechanical University

Economic Impacts of Beach Renourishment Projects in The Mid_Atlantic
Lou Nadeau, Eastern Research Group, Inc.

Measuring the Social Impact of Fishery Management Programs in the Northeast and Mid-Atlantic
Lou Nadeau, Eastern Research Group, Inc.

Bahamians and Climate Change: An Analysis of the Policies and Attitudes Driving Coastal Development
Rhianna Neely, School of the Environment

Mitigating for Loss of Sandy Beach Ecosystem Services from the Adverse Impacts of Shoreline Armoring on California Beaches
Chad Nelsen, Surfrider Foundation

Coastal Resilience California: Using a Multi-Benefit Planning Framework to Advance Conservation at the Land-Sea Interface
Sarah Newkirk, The Nature Conservancy

Integrating Human Dimensions into Climate Change Vulnerability Assessment: Data and Analysis for Considering Equity and Community Issues in the Adapting to Rising Tides Project
Heidi Nutters, San Francisco Bay Conservation and Development Commission

Enhancing Climate Outreach in Coastal Areas of the U.S. Southeast and Caribbean
Geno Olmi, NOAA

Exploring Options for Resource Use and Management through a Grant Competition
Stephanie Showalter Otts

Improving Community Planning for Sea Level Rise, Flooding, and Coastal Storms Through a Grant Competition
Stephanie Showalter Otts, National Sea Grant Law Center

Reducing Nonpoint Source Pollution Through a Grant Competition
Stephanie Showalter Otts, National Sea Grant Law Center

40 Years of CZMA: Is it Time to Integrate Marine Spatial Planning with Washington State's Program?
Rebekah Padgett, Washington State Department of Ecology

The Use of Coastal and Marine Spatial Planning for Selecting Potential Upland and Coastal Alternative Disposal Sites for Dredged Material
Stacy Pala, Battelle

Climate Adaptation and the California Coastal Act: Preparing the Coast for the Future

Hilary Papendick
California Coastal Commission

[Collaboration and Action Needed to Address Ocean-Related Impacts of Climate Change on Human and National Security](#)
Robbin Peach, The Collaborative Institute for Oceans, Climate and Security at UMass Boston

[Lessons Learned From the King Tides Photo Initiative: Using High Tide Images and Social Media to Raise Awareness about Sea Level Rise](#)
Marina Psaros, San Francisco Bay National Estuarine Research Reserve

[Strong Partnerships, Better Decisions...Coastal Management in Placentia Bay, NL](#)
Bobbi Rees
Government of Newfoundland and Labrador

[Stakeholder Involvement: A Multi-Methodological Approach to Determining the Factors That Affect Quality, Satisfaction, and Impact of Public Participation in Coastal Policy Making](#)
Courtney Tobin, Dionne Hoskins, Sania Compton, and Tyler P. Reinagel
Fanning Institute, University of Georgia

[The Role of Land Trusts in Climate Change Adaptation: Using Biodiversity Conservation to Preserve Ecosystem Resilience](#)
Clara Rubin, The Coastal Institute, University of Rhode Island

[Where Did My Coastal Property Go: Providing Information to Potential Purchasers of Coastal Property](#)
Thomas Ruppert, Florida Sea Grant

[Conservation Planning for the Submerged Areas of San Francisco Bay](#)
Korie Schaeffer, NOAA National Marine Fisheries Service

[Working with the National Sea Grant Sustainable Coastal Community Development Network to Build Successful Communities and Economies](#)
Lisa Schiavinato, North Carolina Sea Grant College Program

[Three Reasons to Value Coastal Goods and Services](#)
Jason Scorse, Monterey Institute of International Studies, A Graduate School of Middlebury College

[The Use of Network-Enabled Technologies in Fisheries Monitoring, Control, and Surveillance: A Social Web Approach](#)
Shah Selbe, Center for Ocean Solutions, Stanford University

[Now What? Why All Our Geeky Tools Haven't Saved Coastal Communities Yet, Why They're Not Going to, and Why \(and How\) We Should Keep Using Them Anyway.](#)
Wesley Shaw, Blue Urchin

[Preparing for Rising Tides: Providing Sea-Level Rise Tools and Guidance to Local Governments in Washington State](#)
Kate Skaggs, Washington Department of Ecology

[New York Harbor School Oyster Restoration Project: An Innovative Public-Private Partnership to Implement Oyster Restoration and Public Education in New York Harbor](#)
Tiffany Smythe, New York Harbor Foundation

[Using Social Network Analysis to Understand Collaborative Coastal Ecosystem-Based Management Planning Processes](#)
Tiffany Smythe, University of Rhode Island

[Measuring the Marginal Value of a Recreational Fish with Benefit Transfer Meta-Analysis](#)
Nicholas M. Sotire, Paul R. Hindsley
Environmental Studies & Economics, Eckerd College

[Community Participation in Marine Reserve Science and Management: Port Orford, Oregon](#)
Pete Stauffer, Surfrider Foundation

[West Coast Governors' Agreement on Ocean Health: The Regional Ocean Partnership for the West Coast](#)
Suzanna Stoike, Todd Hallenbeck, Alison Haupt, Alan Lovewell

Washington Department of Ecology

'If You Know What's Good for You': The Need for 'Social Marketing' to Sell North Carolina Communities on the Ecosystem Benefits of Alternative Estuarine Shoreline Stabilization Methods
Deanna Swain, East Carolina University

Implementing a Hazard Resilience Tool: The Coastal Community Resilience Index
Jody Thompson, Auburn University Marine Extension and Research Center

Climate-Smart Sanctuaries: An Initiative to Help National Marine Sanctuaries and Other Place-Based Programs Adapt to and Mitigate for Climate Change
Paul Ticco, NOAA Office of National Marine Sanctuaries

Assessing Flooding Adaptation Needs in the City of Charleston, South Carolina
April L. Turner, S.C. Sea Grant Consortium

The CRI-SC, Community Resource Inventory Online: A Mapping Resource for South Carolina Communities.
April Turner, S.C. Sea Grant Extension Program

Commercial Fisher's Experiences, and Perceptions Toward Marine Debris in Coastal North Carolina
Hans Vogelsong, East Carolina University

Engineering With Nature in the U.S. Army Corps of Engineers
Emily A. Vuxton and Todd S. Bridges, U.S. Army Corps of Engineers Headquarters

Marine Protected Area Design on California's North Coast: A Case Study for Achieving Broad Stakeholder Consensus
Adam Wagschal, H.T. Harvey & Associates

Waterfront Revitalization and Coastal Smart Growth: Implementing Community-Based Initiatives Through the Waterfronts Florida Program
Kenneth Walker, NOAA/OCRM

Community Perceptions of Tourism Development in Bien Unido, Bohol Island, Philippines
Luritta Whiting, University of Washington

Risk Communication and Coastal Climate Change
Kirsten Winters, Oregon Sea Grant

Bay Caretakers and Keepers: Biscayne Bay Regional Restoration Coordination Team - A Voice for the Bay
Theresa Woody, DOI Office of Everglades Restoration Initiatives

Evaluation of Coastal Management Programs in Xiamen, China
Long Zhou, NOAA

Resource Management on the Texas Coast: From Oil and Gas Leasing to CMSP
Kate Zultner, Texas Coastal Management Program



WELCOME TO THE TCS 23 CONFERENCE!

I would like to extend a warm welcome to the 23rd International Conference of The Coastal Society (TCS) and to our host city, Miami! The Miami area has a rich cultural diversity, beautiful and significant natural resources, and is no stranger to the challenges of coastal living and managing natural resources. Water quantity and quality, habitat degradation, invasive species, working waterfronts, shoreline erosion, coastal hazards – you name it, and Miami has experienced it. It's an ideal city not only to hold a conference that focuses on coastal issues, but also to represent the theme of TCS 23 – **Our Coasts, Our Heritage: Ecosystem Services for the Common Good**. We have a strong and diverse schedule of panels, presentations, and extended sessions for you that will explore this theme with respect to planning for emerging coastal issues, the links between society and the environment, real-world policy and management trends, and the value of coastal goods and services to both communities and ecosystems. Please join the open discussion at the conference, as we all share ideas and lessons learned.

I am excited to have with us Mr. Bill Eichbaum of World Wildlife Fund as our Marc J. Hershman Keynote Speaker. Bill's commitment to ocean and coastal issues throughout his career can serve as an inspiration to us all. Bill will kick off the conference on Monday morning, and following his speech will be the Opening Plenary. It's almost hard to believe, but this year we celebrate the 40th anniversary of the Coastal Zone Management Act. The Opening Plenary will highlight successes since the Act's passage and discuss innovations for coastal management over the next 40 years. In addition, ideas from the Opening Plenary will inform a Special Theme Issue of the journal *Coastal Management*. Wednesday's Closing Plenary will focus on a significant issue particularly important to port regions, the global trend towards larger ships. Each plenary will engage participants and encourage critical thinking and solution-sharing.

TCS is able to once again offer events designed especially for students. Students represent the future of our field, and part of the TCS mission is to help prepare them through targeted education and networking opportunities. Please see the TCS 23 Final Program for more information about these events, which include a student networking luncheon and student career forum.



I invite you to continue the discussion post-conference and become a member of TCS. If you are already a member, please consider joining one of our committees. Volunteering for a committee is an ideal way to get to know your fellow TCS members better, to hone your leadership skills, and to help shape the future of our organization. Your expertise and enthusiasm will add value to the great work these committees are already doing. To learn more about our committees and to view their work plans, please visit TCS online at www.thecoastalsociety.org. Feel free to contact me, or any member of the Board of Directors, with questions or comments.

On behalf of TCS members and the Board of Directors, thank you for joining us! I hope you enjoy the conference and your stay in Miami.

Regards,

Lisa Schiavinato

Lisa Schiavinato
President
The Coastal Society



ACKNOWLEDGEMENTS

TCS 23 would not have occurred without the generosity of our sponsors and the dedication of so many individuals who contributed their time, energy and creativity to planning and leading the conference. In addition to our generous sponsors, *The Coastal Society* specifically acknowledges:

Lisa Schiavinato (North Carolina Sea Grant), current President of The Coastal Society, who provided vital overall guidance for and implementation of conference planning;

Hans Vogelsong and Dave Loomis (East Carolina University Institute for Coastal Science and Policy), who served as Co-Conference Chairs and contributed creative energy, logistical support, and overall leadership;

Judy Tucker (TCS Executive Director), who devoted countless hours to provide general conference support and was an endless source of past knowledge and new ideas;

Julia Wyman (Marine Affairs Institute and Rhode Island Sea Grant Legal Program), who took on the role of Program Chair and organized presenter abstracts to create the concurrent sessions schedule, coordinated the Track Co-Chairs, and communicated with presenters and moderators;

Patrick Lawrence (University of Toledo Department of Geography and Planning), who took on the role of Proceedings Editor;

Kristen Fletcher (Coastal States Organization) and Danny Clayton (Florida Coastal Zone Management Program), who provided guidance for the Opening Plenary; and Steven MacLeod (Ecology and Environment, Inc.) and Bob Swett (Florida Sea Grant), who led the effort for the Closing Plenary;

The TCS 23 conference Track Chairs, who provided valuable input into the review of abstract submissions: Chris Ellis (NOAA Coastal Services Center); Paul Hindsley (Eckerd College Department of Environmental Studies); Craig Landry (East Carolina University Department of Economics and Institute for Coastal Science and Policy); Tali MacArthur (New Jersey Department of Environmental Protection); Steven MacLeod (Ecology and Environment, Inc.); Kate Killerlain Morrison (Sargasso Sea Alliance); Alesia Read (Maryland Sea Grant); Brent Stoffle (NOAA Southeast Fisheries Science Center); Bhaskaran Subramanian (Maryland Department of Natural Resources); and Bob Swett;

Jeff Benoit (Restore America's Estuaries), who chaired the conference's development committee and, along with Lisa Schiavinato, Kate Killerlain Morrison, and Judy Tucker, led the sponsorship efforts for TCS 23;

Tali MacArthur and Paul Ticco (NOAA National Marine Sanctuary Program) who co-chaired the student travel scholarship process;

Michael Flynn (Richard Stockton College of New Jersey Coastal Research Center), Michelle Covi (East Carolina University), and Elizabeth Brown-Pickren (East Carolina University), who organized the student activities and student program;

Michelle Covi, who served as conference webmaster;

Michelle Wood (NOAA Atlantic Oceanographic and Meteorological Laboratory), Pamela Sweeney (Biscayne Bay Aquatic Preserve), and Sarah Bellmund (Biscayne National Park), who were responsible for the high quality and variety of the conference field trips;

Bob Swett who, with the help of Julia Wyman and Paul Hindsley, worked with the conference workshop organizers;

Michael Flynn who worked diligently to incorporate green principles into all of our conference planning;

Chris Ellis and Paul Hindsley, who developed the conference evaluation survey and analysis;

John Cooksey (MF Cooksey Conference Management), who served as Conference Coordinator and also coordinated our onsite volunteers; and

The National Sea Grant Library, for hosting the online TCS 23 Proceedings.

SPONSORS

The Coastal Society wishes to thank the following sponsors for their commitment to supporting the conference:

EXECUTIVE SPONSOR

US Geological Survey, Coastal
and Marine Geology Program



Florida Sea Grant College Program



Battelle Memorial Institute



H. W. Hoover Foundation



Coastal States Organization



I.M. Systems Group, Inc.



Coastal States Stewardship Foundation



National Marine Fisheries Service
Office of Habitat Conservation



Florida Power & Light



NOAA Coastal Services Center



If you are interested in supporting The Coastal Society's mission and programs beyond the conference, please contact the TCS Office at: coastalsoc@aol.com or (757) 565-0999.

SPONSORS

The Coastal Society wishes to thank the following sponsors for their commitment to supporting the conference:

NOAA Office of Ocean and Coastal Resource Management



Restore America's Estuaries



National Marine Sanctuaries Foundation



Sea Grant Association

Sea Grant Association

NOAA Sanctuaries Program
Southeast Regional Office



South Carolina Sea Grant Consortium



North Carolina Sea Grant College Program



Taylor & Francis Group, Ltd.



Port of Long Beach



The Nature Conservancy



Port of Miami



Tridec Technologies





TCS23 CONFERENCE ORGANIZING COMMITTEE

CONFERENCE CO-CHAIRS

David Loomis

East Carolina University, Institute for Coastal Science and Policy

Hans Vogelsong

East Carolina University, Coastal Resources Management PhD Program

PROGRAM CHAIR

Julia Wyman

Roger Williams University School of Law, Marine Affairs Institute

PROCEEDINGS EDITOR

Patrick Lawrence

University of Toledo, Department of Geography and Planning

OPENING PLENARY CO-CHAIRS

Kristen Fletcher

Coastal States Organization

Danny Clayton

Florida Department of Environmental Protection, Coastal Management Program

CLOSING PLENARY CO-CHAIRS

Steve MacLeod

Ecology and Environment, Inc.

Bob Swett

Florida Sea Grant

COMMITTEE MEMBERS

Elizabeth Brown-Pickren

East Carolina University, Coastal Resources Management PhD Program

Chris Ellis

NOAA Coastal Services Center

Sarah Fangman

NOAA National Marine Sanctuaries Program Southeast Region

Michael Flynn
Richard Stockton College of New Jersey, Coastal Research Center

Paul Hindsley
Eckerd College, Environmental Studies Program

Alan Leonardi
NOAA Atlantic Oceanographic and Meteorological Laboratory

Tali MacArthur
New Jersey Department of Environmental Protection

Jim Murley
Southeast Florida Regional Partnership and Florida Atlantic University

Peter Ortner
University of Miami, Rosenstiel School of Meteorological and Atmospheric Science

Rebekah Padgett
Washington State Department of Ecology

Don Pybas
URS Corporation

Alesia Read
Maryland Sea Grant and University New Hampshire

Brent Stoffle
NOAA Southeast Fisheries Science Center

Bhaskar Subramanian
Maryland Department of Natural Resources

CONFERENCE COORDINATION

John Cooksey
M.F. Cooksey Conference Management

CONFERENCE WEBMASTER

Michelle Covi
East Carolina University, Coastal Resources Management PhD Program

GENERAL CONFERENCE SUPPORT

Judy Tucker
TCS Executive Director



2012 THE COASTAL SOCIETY OFFICERS AND BOARD OF DIRECTORS

Officers

Lisa C. Schiavinato, President
Kate Killerlain Morrison, President-Elect
Jeff Benoit, Past-President
Jeff Smith, Treasurer
Chris Ellis, Secretary

Directors

Andy Bohlander
M. Richard DeVoe
Susan Farady
Patrick Lawrence
Tony MacDonald
Rebekah Padgett
Bhaskaran Subramanian
Susan White

Ex Officio Directors

Paul Ticco
Ariana Marshall

Executive Director

Judy Tucker

PRESIDENTS OF THE COASTAL SOCIETY

M.H. Schwartz (1975-1976)
Evelyn Pruitt (1977)
Edward T. La Roe (1978)
Lewis M. Alexander (1979)
Norbert Psuty (1980)
Marc Hershman (1981)
J. Kevin Sullivan (1982-1983)
Maurice P. Lynch (1984-1985)
Virginia K. Tippie (1986-1987)
William H. Queen (1988-1989)
Lauriston R. King (1990-1991)
Margaret A. Davidson (1992-1993)
David Smith (1994-1995)
Michael Orbach (1996-1998)
Megan Baliff (1999-2000)
Walter Clark (2001-2002)
John Duff (2003-2004)
Paul C. Ticco (2005-2006)
Kristen M. Fletcher (2007-2008)
Jeff Benoit (2009-2010)
Lisa C. Schiavinato (2011-2012)



THE COASTAL SOCIETY CONFERENCE PROCEEDINGS

The Present and Future of Coasts. Proceedings of the First Annual Conference of The Coastal Society, Arlington, VA, November, 1975. The Coastal Society, Bethesda, MD. 278p.

Time-Stressed Coastal Environments: Assessment and Future Action. Proceedings of the Second Annual Conference of The Coastal Society, New Orleans, LA, November 17-20, 1976. The Coastal Society, Arlington, VA. 290p.

Energy Across the Coastal Zone. Proceedings of the Third Annual Conference of The Coastal Society, Seattle, WA. November 3-5, 1977. The Coastal Society, Arlington, VA. 202p.

Coping with the Coast. Proceedings of the Fourth Annual Conference of The Coastal Society, Burlington, Ontario, September 26-28, 1978. 226p.

Resource Allocation Issues in the Coastal Environment. Proceedings of the Fifth Annual Conference of The Coastal Society, Newport, RI, November 6-8, 1979. The Coastal Society, Arlington, VA. 455p.

Utilization of Science in the Decision-Making Process. Proceedings of the Sixth Annual Conference of The Coastal Society, San Diego, CA, October 13-15, 1980. The Coastal Society, Arlington, VA. 330p.

Achievements of the '70s and Prospects for the '80s. Proceedings of the Seventh Annual Conference of The Coastal Society, Galveston, TX, October 11-14, 1981. The Coastal Society, Bethesda, MD. 406p.

Communicating Coastal Information. Proceedings of the Eighth Annual Conference of The Coastal Society, Baltimore, MD, October 11-13, 1982. The Coastal Society, Bethesda, MD. 479p.

Gambling with the Shore. Proceedings of the Ninth Annual Conference of The Coastal Society, Atlantic City, NJ, October 14-17, 1984. The Coastal Society, Bethesda, MD. 426p.

Estuarine and Coastal Management: Tools of the Trade. Proceedings of the Tenth National Conference of the Coastal Society, New Orleans, LA, October 12-15, 1986. The Coastal Society, Bethesda, MD. (2 volumes) 798p.

Ports and Harbors: Our Link to the Water. Proceedings of the Eleventh International Conference of The Coastal Society, Boston, MA, October 22-26, 1988. The Coastal Society, Bethesda, MD. 441p.

Twelfth International Conference of The Coastal Society, San Antonio, TX, October 21-24, 1990. The Coastal Society, Gloucester, MA 918p.

Organizing for the Coast. Proceedings of the Thirteenth International Conference of The Coastal Society, Washington DC, April 5-8, 1992. The Coastal Society, Gloucester, MA. 806p.

The Coast: Organizing for the Future. Proceedings of the Fourteenth International Conference of The Coastal Society, Charleston, SC, April 17-21, 1994. The Coastal Society, Gloucester, MA. 352p.

Seeking Balance: Conflict, Resolution & Partnership. Proceedings of the Fifteenth International Conference of The Coastal Society, Seattle, WA, July 14-17, 1996. The Coastal Society, Alexandria, VA. 784p.

Minding the Coast: It's Everybody's Business. Proceedings of the Sixteenth International Conference of The Coastal Society, Williamsburg, VA, July 12-15, 1998. The Coastal Society, Alexandria, VA. 425p.

Coasts at the Millennium. Proceedings of the Seventeenth International Conference of The Coastal Society, Portland, OR, July 9-12, 2000. The Coastal Society, Alexandria, VA.

Converging Currents: Science, Culture, and Policy at the Coast. Proceedings of the Eighteenth International Conference of The Coastal Society, Galveston, TX, May 19-22, 2002. The Coastal Society, Alexandria, VA.

Measure for Measure: How Do We Gauge Coastal Stewardship? Proceedings of the Nineteenth International Conference of The Coastal Society, Newport, RI, May 23 – 26, 2004. The Coastal Society, Alexandria, VA.

Charting a New Course: Shaping Solutions for the Coast. Proceedings of the Twentieth International Conference of The Coastal Society, St. Pete Beach, FL, May 14 – 17, 2006. The Coastal Society, Alexandria, VA.

Coastal Footprints: Minimizing Human Impacts, Maximizing Stewardship. Proceedings of the Twenty-First International Conference of The Coastal Society, Redondo Beach, CA, June 29 – July 2, 2008. The Coastal Society, Williamsburg, VA.

Shifting Shorelines: Adapting to the Future. Proceedings of the Twenty-Second International Conference of The Coastal Society, Wilmington, NC, June 13 – June 16, 2010. The Coastal Society, Williamsburg, VA. <http://nsgl.gso.uri.edu/coastalsociety/TCS22/TCS22index.html>

Our Coasts, Our Heritage: Ecosystem Services for the Common Good. Proceedings of the Twenty-Third International Conference of The Coastal Society, Miami, FL, June 3 – June 6, 2012. The Coastal Society, Williamsburg, VA. <http://nsgl.gso.uri.edu/coastalsociety/TCS23/TCS23index.pdf>

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Monday June 4, 2012

Concurrent Session I

1:30 – 3:30 pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Student Session
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid B</i>
Session Title		RISK COMMUNICATION AND COASTAL CLIMATE CHANGE		PROBLEM SOLVE-ING: UNDERSTANDING SOCIAL VALUATION OF ECOSYSTEM SERVICES (SOLVES) FOR BETTER COASTAL MANAGEMENT			Student conversations in careers
Session Moderator	Patrick Lawrence, University of Toledo	Kirsten Winters, Oregon Sea Grant	Paul Ticco, NOAA	Susan Lovelace, NOAA	Chris Ellis, NOAA NOS/CSC	Tony MacDonald, Urban Coast Institute at Monmouth University	Michael Flynn, The Richard Stockton College of New Jersey Coastal Research Center
Presentation 1 1:30-1:50p	CONNECTING THE DOTS IN THE COASTAL OCEAN WITH COMPREHENSIVE ECOSYSTEM ASSESSMENT Melissa M. Foley, Center for Ocean Solutions, Stanford University	Joseph Cone, Oregon Sea Grant	IMPLEMENTING A HAZARD RESILIENCE TOOL; THE COASTAL COMMUNITY RESILIENCE INDEX Jody Thompson, Auburn University Marine Extension and Research Center	Alisa Coffin, USGS Rocky Mountain Geographic Science Center Zachary Cole, Parks & Tourism Department, University of Florida	LESSONS LEARNED ABOUT SHARING OCEAN SPACE AND PLACE FOR THE COMMON GOOD Flaxen Conway, Oregon State University/Oregon Sea Grant	COASTAL AND MARINE SPATIAL PLANNING EFFORTS: THE TRADE-OFFS BETWEEN STATUTORY AND ADMINISTRATIVE AUTHORITY John A. Duff, University of Massachusetts Boston	
Presentation 2 1:50-2:10p	BALANCED GROWTH AS A SUSTAINABLE ECONOMIC DEVELOPMENT STRATEGY Joe Lucente, Ohio State University Extension	Kirsten Winters, Oregon Sea Grant Kristen Grant, Maine Sea Grant	The CRI-SC, COMMUNITY RESOURCE INVENTORY ONLINE: A MAPPING RESOURCE FOR SOUTH CAROLINA COMMUNITIES. April L. Turner, S.C. Sea Grant Extension Program	Jarrold Loerzel, College of Charleston	TWEET-FACE; USING SOCIAL MEDIA TO IMPROVE OCEAN STEWARDSHIP Carli Bertrand	40 YEARS OF CZMA: IS IT TIME TO INTEGRATE MARINE SPATIAL PLANNING WITH WASHINGTON STATE'S PROGRAM? Rebekah R. Padgett, Washington State Department of Ecology	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Monday June 4, 2012							
Concurrent Session I 1:30 – 3:30							
Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Student Session
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid B</i>
Session Title							Student conversations in careers
Session Moderator	Patrick Lawrence, University of Toldeo	Kirsten Winters, Oregon Sea Grant	Paul Ticco, NOAA	Susan Lovelace, NOAA	Chris Ellis, NOAA NOS/CSC	Tony MacDonald, Urban Coast Institute at Monmouth University	Michael Flynn, The Richard Stockton College of New Jersey Coastal Research Center
Presentation 3 2:10-2:30p	MARACOOS INTO THE 21 ST CENTURY: MOVING FROM OBSERVING TO FORECASTING IN ORDER TO SAVE LIVES, PROTECT LIVLIHOODS, AND BOOST THE ECONOMY IN THE MID-ATLANTIC Gerhard F. Kuska, MARACOOS	Stuart Carlton, Florida Sea Grant	MAPPING THE FUTURE OF COASTAL AND OCEAN OBSERVING IN THE SOUTHEAST Debra Hernandez	Carena J. van Riper, Texas A & M University and the Fishing and Fisheries Research Centre at James Cook University	“IF YOU KNOW WHAT’S GOOD FOR YOU”: THE NEED FOR “SOCIAL MARKETING” TO SELL NORTH CAROLINA COMMUNITIES ON THE ECOSYSTEM BENEFITS OF ALTERNATIVE ESTUARINE SHORELINE STABILIZATION METHODS Deanna Swain, East Carolina University	THE NEW OCEAN ORDER: WHAT’S LAW GOT TO DO WITH IT? Susan E. Farady, Marine Affairs Institute, Rhode Island Sea Grant Legal Program	
Presentation 4 2:30-2:50p	ECONOMIC IMPACTS OF BEACH RENOURISHMENT PROJECTS IN THE MID-ATLANTIC Lou Nadeau, Eastern Research Group, Inc.	Patrick Corcoran, Oregon Sea Grant	Discussion	Darius Semmens & Ben Sherrouse, USGS Rocky Mountain Geographic Science Center	Discussion	WHERE DID MY COASTAL PROPERTY GO: PROVIDING INFORMATION TO POTENTIAL PURCHASERS OF COASTAL PROPERTY Thomas Ruppert, Florida Sea Grant	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Monday June 4, 2012

Concurrent Session II

3:30 – 5:00 pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Student Session
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid B</i>
Session Title		COLLABORATION AND ACTION NEEDED TO ADDRESS OCEAN-RELATED IMPACTS OF CLIMATE CHANGE ON HUMAN AND NATIONAL SECURITY	TOOLS THAT SUPPORT CLIMATE-SMART COASTAL AND MARINE PLANNING, CONSERVATION, AND RESTORATION	EXPLORING OPTIONS FOR RESOURCE USE AND MANAGEMENT THROUGH A GRANT COMPETITION	COASTAL MANAGEMENT DURING A TIME OF UNSETTLED LOCAL GOVERNANCE	SMART GROWTH AND RESILIENCE TO HAZARDS: STRATEGIES TO PROMOTE COASTAL COMMUNITY SUSTAINABILITY AND DURABILITY	Student Resume workshop
Session Moderator	Pete Stauffer, Surfrider Foundation	Robbin Peach, The Collaborative Institute for Oceans, Climate and Security at UMass Boston	Jennifer Hoffman, EcoAdapt	Stephanie Showalter Otts, National Sea Grant Law Center	Lewie Lawrence, Middle Peninsula Planning District Commission	Rebecca Feldman, NOAA	Liz Brown-Pickren
Presentation 1 3:30-3:50p	NOW WHAT? WHY ALL OUR GEEKY TOOLS HAVEN'T SAVED COASTAL COMMUNITIES YET, WHY THEY'RE NOT GOING TO, AND WHY (AND HOW) WE SHOULD KEEP THEM ANYWAY. Wesley Shaw, Blue Urchin	Richard Delaney, Center for Coastal Studies	Panel	Sara Gosman, University of Michigan	Panel	Rebecca Feldman, NOAA	
Presentation 2 3:50-4:10p	INTEGRATING HUMAN DIMENSIONS INTO CLIMATE CHANGE VULNERABILITY ASSESSMENT: DATA AND ANALYSIS FOR CONSIDERING EQUITY AND COMMUNITY ISSUES IN THE ADAPTING TO RISING TIDES PROJECT Heidi Nutters, San Francisco Bay Conservation and Development Commission	Leslie-Ann McGee, Battelle		Read Porter, Environmental Law Institute		Gavin Smith, Department of Homeland Security Center of Excellence, University of North Carolina at Chapel Hill	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Monday June 4, 2012

Concurrent Session II

3:30 – 5:00 pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Student Session
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid B</i>
Session Title							Student Resume Workshop
Session Moderator	Pete Stauffer, Surfrider Foundation	Robbin Peach, The Collaborative Institute for Oceans, Climate and Security at UMass Boston	Jennifer Hoffman, EcoAdapt	Stephanie Showalter Otts, National Sea Grant Law Center	Lewie Lawrence, Middle Peninsula Planning District Commission	Rebecca Feldman, NOAA	Liz Brown-Pickren
Presentation 3 4:10-4:30p	GIS SPATIAL PLANNING FOR AN OFFSHORE WIND ENERGY TRANSMISSION SYSTEM Sara Mochrie, Ecology and Environment, Inc.	Discussion		Natalie Springuel, Maine Sea Grant		Julie Dennis, Florida Department of Economic Opportunity	
Presentation 4 4:30-4:50p	Discussion	Discussion		Discussion		Lee Einsweiler, Code Studio	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5, 2012

Concurrent Session III

8:30 –10:00 am

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title		WADING IN – TACKLING SEA LEVEL RISE IN NORTH CAROLINA; RISK ASSESSMENT, COMMUNICATION, ADAPTATION STRATEGIES, AND POLICY-MAKING				
Session Moderator	Patrick Lawrence, University of Toledo	Rebecca Feldman, NOAA	Paul Ticco, NOAA	Craig Landy, East Carolina University	Jeff Benoit, Restore America’s Estuaries	Michael Flynn, The Richard Stockton College of New Jersey Coastal Research Center
Presentation 1 8:30-8:50a	COASTAL WATERSHED RESTORATION IN THE GREAT LAKES: PROGRESS IN THE TEN MILE CREEK/OTTAWA RIVER WATERSHED, OHIO Patrick Lawrence, University of Toledo	Michelle Covi and Donna Kain, East Carolina University	DEVELOPING AND ASSESSING REGULATORY AND OUTREACH STRATEGIES FOR PREVENTING THE SPREAD OF AQUATIC INVASIVE SPECIES THROUGH BOATING Samuel Chan, Oregon State University	WORKING WATERFRONTS INITIATIVES IN ALABAMA: PROTECTING ENVIRONMENTAL, ECONOMIC AND CULTURAL RESOURCES Marie Dyson, Auburn University Marine Extension and Research Center/Sea Grant	NOAA’S NATIONAL COASTAL POPULATION REPORT Kristen Crossett, NOS, NOAA	DO CURRENT WASTE CONTROL INITIATIVES PROTECT ECOSYSTEM SERVICES IN URBAN WATERS? Richard Burroughs, University of Rhode Island
Presentation 2 8:50-9:10a	THE VALUE OF EELGRASS <i>Zostera marina</i> IN PUGET SOUND, WA. STRESSOR ABATEMENT THROUGH IMPROVED REGULATIONS AND POLICIES COMPARED WITH TARGETS AND SUCCESSES FROM OTHER ESTUARINE SYSTEMS Heather Gibbs, Washington Department of Natural Resources	John Dorman, North Carolina Department of Crime Control and Public Safety	CLIMATE-SMART SANCTUARIES: AN INITIATIVE TO HELP NATIONAL MARINE SANCTUARIES AND OTHER PLACE-BASED PROGRAMS ADAPT TO AND MITIGATE FOR CLIMATE CHANGE Paul Ticco	ANALYZING POTENTIAL OIL SPILL DAMAGES TO WETLANDS IN GALVESTON BAY: A GIS-CENTRIC APPROACH Hillary Huffer, East Carolina University	STAKEHOLDER INVOLVEMENT: A MULTI-METHODOLOGICAL APPROACH TO DETERMINING THE FACTORS THAT AFFECT QUALITY, SATISFACTION, AND IMPACT OF PUBLIC PARTICIPATION IN COASTAL POLICY MAKING Tyler Reinagel, Fanning Institute, University of Georgia	THE USE OF COASTAL AND MARINE SPATIAL PLANNING FOR SELECTING POTENTIAL UPLAND AND COASTAL ALTERNATIVE DISPOSAL SITES FOR DREDGED MATERIAL Stacy Pala, Battelle

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5, 2012

Concurrent Session III

8:30 –10:00 am

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title						
Session Moderator	Patrick Lawrence, University of Toledo	Rebecca Feldman, NOAA	Paul Ticco, NOAA	Craig Landy, East Carolina University	Jeff Benoit, Restore America's Estuaries	Michael Flynn, The Richard Stockton College of New Jersey Coastal Research Center
Presentation 3 9:10-9:30a	FISH NURSERY FUNCTION OF OCEAN SURF-ZONE HABITAT: RESPONSE TO A HUMAN DISTURBANCE GRADIENT Tom Lankford, University of North Carolina Wilmington	Tancred Miller, Division of Coastal Management, North Carolina Department of Environment and Natural Resources	PLANNING FOR MYSTERIOUS CHANGE: THE CHALLENGE OF UNDERSTANDING AND SHAPING SOCIETAL RESPONSES TO OCEAN ACIDIFICATION Patrick Christie, University of Washington	A COMMUNITY-BASED FRAMEWORK FOR IDENTIFYING, ASSESSING, AND EVALUATING ECOSYSTEM SERVICES PROVISIONED BY MARINE RESERVES IN OREGON Peter Freeman, Oregon State University	ENHANCING CLIMATE OUTREACH IN COASTAL AREAS OF THE U.S. SOUTHEAST AND CARIBBEAN Kasey Jacobs	REDUCING COASTAL ECOSYSTEM RISKS FROM HULL-BORNE INVASIVE SPECIES Leigh Johnson, University of California Cooperative Extension
Presentation 4 9:30-9:50a	Discussion	Gavin Smith and Dylan Sandler, University of North Carolina at Chapel Hill	BUILDING A GREAT LAKES SPATIAL DECISION SUPPORT TOOLBOX TO ADDRESS COMPREHENSIVE PLAN IMPLEMENTATION AND COASTAL HAZARDS Kathy Johnson, Wisconsin Coastal Management Program	PORT PARTICIPATION IN A REGIONAL OCEAN PARTNERSHIP: LESSONS LEARNED FROM ONE LOCAL MUNICIPALITY'S EXPERIENCE WITH THE WEST COAST GOVERNORS' ALLIANCE ON OCEAN HEALTH Angie Fredrickson	ENGINEERING WITH NATURE IN THE U.S. ARMY CORPS OF ENGINEERS Emily Vuxton, U.S. Army Corps of Engineers Headquarters	IMPLICATIONS OF PLUGGING GRID DITCHES IN MID-ATLANTIC COASTAL SALT MARSHES: VEGETATION CHANGES, MOSQUITOES, CARBON SEQUESTRATION, AND KEEPING PACE WITH SEA LEVEL RISE Erin McLaughlin, Maryland Department of Natural Resources

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5, 2012

Concurrent Session IV

10:30 –12:00 pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Ecosystem Services in the Real World – Policy and Management Trends (second room)
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid D</i>
Session Title		REDUCING NONPOINT SOURCE POLLUTION THROUGH A GRANT COMPETITION			<i>Ocean Frontiers</i> Film & Discussion: Lessons Learned on Marine Spatial Planning and Ecosystem-Based Management	
Session Moderator	Michelle Covi, East Carolina University	Stephanie Showalter Otts, National Sea Grant Law Center	Hans Vogelsong, East Carolina University	Kathryn Schleit	Karen Anspacher-Meyer, Green Fire Productions	Pete Stauffer, Surfrider Foundation
Presentation 1 10:30-10:50a	VARIATION IN CULTURAL KNOWLEDGE OF COASTAL HAZARDS ON HATTERAS ISLAND, NC James Brinkley, East Carolina University	Laurie Fowler, University of Georgia	A REVIEW OF CONTINGENT VALUATION METHODS FOR WETLAND GOODS AND SERVICES Leigh Habegger, The Coastal Institute, University of Rhode Island	INTERNATIONAL TRADE IN SPINY DOGFISH AND FISHERY MANAGEMENT ASPECTS Andrea Dell’ Apa, East Carolina University		MARINE PROTECTED AREA DESIGN ON CALIFORNIA’S NORTH COAST: A CASE STUDY FOR ACHIEVING BROAD STAKEHOLDER CONSENSUS Adam Wagschal, H.T. Harvey & Associates
Presentation 2 10:50p-11:10a	NONPOINT SOURCE POLLUTION FROM COASTAL BRIDGES Daniel Marcucci, East Carolina University	Kenneth Kilbert, University of Toledo	THREE REASONS TO VALUE COASTAL GOODS AND SERVICES Monica Galligan Center for the Blue Economy, Monterey Institute of International Studies	FOR EROSION MITIGATION IN MATUNUCK: THE RELEVANCE OF COASTAL PROCESSES AND CLIMATE CHANGE Shannon Hulst, The Coastal Institute, University of Rhode Island		COMMUNITY PARTICIPATION IN MARINE RESERVE SCIENCE AND MANAGEMENT: PORT ORFORD, OREGON Pete Stauffer, Surfrider Foundation

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5, 2012

Concurrent Session IV

10:30 –12:00 pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends	Ecosystem Services in the Real World – Policy and Management Trends (second room)
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>	<i>Orchid D</i>
Session Title					<i>Ocean Frontiers Film & Discussion: Lessons Learned on Marine Spatial Planning and Ecosystem-Based Management</i>	
Session Moderator	Michelle Covi, East Carolina University	Stephanie Showalter Otts, National Sea Grant Law Center	Hans Vogelsong, East Carolina University	Kathryn Schleit	Karen Anspacher-Meyer, Green Fire Productions	Pete Stauffer, Surfrider Foundation
Presentation 3 11:10p-11:30a		Ross Pifer, Penn State University	“SHOW ME THE MONEY” ECONOMICS: NATIONAL OCEAN WATCH DATA FOR OCEAN MANAGEMENT Zac Hart, I.M. Systems Group, Inc., NOAA Coastal Services Center	MEASURING THE SOCIAL IMPACT OF FISHERY MANAGEMENT PROGRAMS IN THE NORTHEAST AND MID-ATLANTIC Lou Nadeau, Eastern Research Group, Inc.		THE ROLE OF LAND TRUSTS IN CLIMATE CHANGE ADAPTATION: USING BIODIVERSITY CONSERVATION TO PRESERVE ECOSYSTEM RESILIENCE Clara Rubin, The Coastal Institute, University of Rhode Island
Presentation 4 11:30-11:50a	Discussion	Discussion	INCREASING RESILIENCY TO COASTAL HAZARDS: CLIMATE ADAPTATION AND COASTAL RESILIENCY PLANNING AT THE PORT OF LONG BEACH Thomas Jelenic	Discussion		NEW YORK HARBOR SCHOOL OYSTER RESTORATION PROJECT: AN INNOVATIVE PUBLIC-PRIVATE PARTNERSHIP TO IMPLEMENT OYSTER RESTORATION AND PUBLIC EDUCATION IN NEW YORK HARBOR Tiffany Smythe, New York Harbor Foundation

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5th, 2012 Concurrent Session V 1:30 –3:00pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title	DEFINING ECOSYSTEM SERVICES: INSIGHTS FROM MARINE AND ESTUARINE GOAL SETTING FOR SOUTH FLORIDA			WORKING WITH THE NATIONAL SEA GRANT SUSTAINABLE COASTAL COMMUNITY DEVELOPMENT NETWORK TO BUILD SUCCESSFUL COMMUNITIES AND ECONOMIES		
Session Moderator	David Loomis, Institute for Coastal Science and Policy, East Carolina University	Tony MacDonald, Urban Coast Institute at Monmouth University	Steve MacLeod, Ecology and Environment, Inc.	Lisa Schiavinato, North Carolina Sea Grant College Program	Bhaskaran Subramanian, Maryland Department of Natural Resources	Julia Wyman, Rhode Island Sea Grant Legal Program/Roger Williams University School of Law
Presentation 1 1:30-1:50p	Pete Ortner, University of Miami	PREPARING CALIFORNIA FOR ITS FUTURE COASTLINE Adina Abeles, Center for Ocean Solutions	ASSESSING FLOODING ADAPTATION NEEDS IN THE CITY OF CHARLESTON, S.C. April L. Turner, S.C. Sea Grant Consortium	Vicky Carrasco, Maryland Sea Grant	USING SOCIAL NETWORK ANALYSIS TO UNDERSTAND COLLABORATIVE COASTAL ECOSYSTEM-BASED MANAGEMENT PLANNING PROCESSES Tiffany Smythe, University of Rhode Island	CLIMATE ADAPTATION AND SHORELINE CHANGE IN THE REPUBLIC OF THE MARSHALL ISLANDS Andy Bohlander, University of Hawaii Sea Grant College Program
Presentation 2 1:50-2:10p	Joe Boyer, SERC-FIU	SEA-LEVEL RISE ADAPTATION PLANNING FOR THE CITY OF LOS ANGELES, CA Juliette Finzi Hart, University of Southern California Sea Grant	THE EVOLUTION OF TIDAL SHORELINE MANAGEMENT IN VIRGINIA: ADAPTIVE CHANGES PROMOTE BETTER INFORMED DECISIONS Pamela Mason, Center for Coastal Resources Management, College of William and Mary	Kristen Grant, Maine Sea Grant	A SOCIAL NETWORK ANALYSIS OF NOAA'S REGIONAL COLLABORATION INITIATIVE Chris Ellis, NOAA Coastal Services Center	CONSERVATION PLANNING FOR THE SUBMERGED AREAS OF SAN FRANCISCO BAY Korie Schaeffer, NOAA National Marine Fisheries Service

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5th, 2012 Concurrent Session V 1:30 –3:00pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	Valuing Coastal Goods and Services	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends
Room	<i>Brickell Pre-Function</i>	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title				WORKING WITH THE NATIONAL SEA GRANT SUSTAINABLE COASTAL COMMUNITY DEVELOPMENT NETWORK TO BUILD SUCCESSFUL COMMUNITIES AND ECONOMIES		
Session Moderator	David Loomis, Institute for Coastal Science and Policy, East Carolina University	Tony MacDonald, Urban Coast Institute at Monmouth University	Steve MacLeod, Ecology and Environment, Inc.	Lisa Schiavinato, North Carolina Sea Grant College Program	Bhaskaran Subramanian, Maryland Department of Natural Resources	Julia Wyman, Rhode Island Sea Grant Legal Program/Roger Williams University School of Law
Presentation 3 2:10-2:30p	Chris Kelble, NOAA AOML	COASTAL RESILIENCE CALIFORNIA: USING A MULTI-BENEFIT PLANNING FRAMEWORK TO ADVANCE CONSERVATION AT THE LAND-SEA INTERFACE Sarah Newkirk, The Nature Conservancy	EVALUATION OF MITIGATION AND ADAPTATION STRATEGIES FOR COMMUNITIES ON THE DELAWARE BAY IN RESPONSE TO COASTAL & CLIMATE CHANGE HAZARDS Steve Eberbach	Joe Lucente, Ohio Sea Grant	CHARACTERIZING THE SOCIAL LANDSCAPE AND LAND COVER OF BARRIER ISLAND COMMUNITIES Andrew Bennett, East Carolina University	MARYLAND'S ECOSYSTEM ENHANCEMENT PROGRAM – AN ECOSYSTEM BASED APPROACH TO MITIGATION Kristen Fleming, Maryland Department of Natural Resources
Presentation 4 2:30-2:50p	Discussion	PREPARING FOR RISING TIDES: PROVIDING SEA-LEVEL RISE TOOLS AND GUIDANCE TO LOCAL GOVERNMENTS IN WASHINGTON STATE Kate Skaggs, Washington Department of Ecology	COMMERCIAL FISHER'S EXPERIENCES, AND PERCEPTIONS TOWARD MARINE DEBRIS IN COASTAL NORTH CAROLINA Hans Vogelsong, East Carolina University	Discussion	Discussion	PRESERVING ECOSYSTEM SERVICES TO IMPROVE HUMAN WELL-BEING AT AN INDUSTRIAL PORT COMPLEX: MOVING BEYOND TRADITIONAL APPROACHES MITIGATION AT THE PORT OF LONG BEACH Thomas Jelenic

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5th, 2012 Concurrent Session VI 3:30 –5:00pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Valuing Coastal Goods and Services	Ecosystem Services in the Real World – Policy and Management Trends	Ecosystem Services in the Real World – Policy and Management Trends, second room
Room	<i>Brickell Pre-Function</i>	<i>Orchid B</i>	<i>Brickell South</i>	<i>Brickell North</i>	<i>Orchid C</i>
Session Title	WE'RE LOOKING OUT FOR YOU: USING INDICATORS TO OBSERVE SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONDITIONS AT MULTIPLE SCALES ***session lasts until 6:30 PM***	THE POTENTIAL OF MARINE CITIZENSHIP TO MOBILISE PUBLIC BEHAVIOUR CHANGE TO SUPPORT MARINE ECOSYSTEM SERVICES ***session lasts until 6:30 PM***			COASTAL AND MARINE SPATIAL PLANNING ADVANCEMENT TRAINING (CMSP-AT) ***session lasts until 6:30 PM***
Session Moderator	Susan Lovelace, NOAA	Stephen Fletcher, Centre for Marine and Coastal Policy Research, Plymouth University	Craig Landry, East Carolina University	Chad Nelsen, Surfrider Foundation	Leslie-Ann McGee, Batelle
Presentation 1 3:30-3:50p	David Loomis, East Carolina University		THE ECONOMIC IMPACT OF FRESHWATER INPUTS TO AN ESTUARINE FISHERY Chris Kennedy, George Mason University	MITIGATING FOR LOSS OF SANDY BEACH ECOSYSTEM SERVICES FROM THE ADVERSE IMPACTS OF SHORELINE ARMORING ON CALIFORNIA BEACHES Chad Nelsen, Surfrider Foundation	
Presentation 2 3:50-4:10p	David Hastings, NOAA NCDC; Kristen Crossett, NOAA NOS Special Projects Division; Michael Jepson, NOAA NMFS; Sam Brody, Texas A &M; Susan Lovelace, NOAA		PUBLIC PERCEPTIONS OF SEAWATER AIR CONDITIONING IN WAIKIKI Jonathan Lilley, University of Hawaii Sea Grant College Program	BEACH ECOLOGY AROUND THE NATION: A CRITICAL LOOK AT STATE-LEVEL MANAGEMENT Clara Cartwright, Surfrider Foundation	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Tuesday June 5th, 2012 Concurrent Session VI 3:30 –5:00pm

Track	Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats	Valuing Coastal Goods and Services	Ecosystem Services in the Real World – Policy and Management Trends	Ecosystem Services in the Real World – Policy and Management Trends, second room
Room	<i>Brickell Pre-Function</i>	<i>Orchid B</i>	<i>Brickell South</i>	<i>Brickell North</i>	<i>Orchid C</i>
Session Title					
Session Moderator	Susan Lovelace, NOAA Hollings Marine Laboratory, JHT	Stephen Fletcher, Centre for Marine and Coastal Policy Research, Plymouth University	Craig Landry, East Carolina University	Chad Nelsen, Surfrider Foundation	Leslie-Ann McGee, Batelle
Presentation 3 4:10-4:30p	Maria Dillard, University of Pittsburg & NOAA Hollings Marine Laboratory, JHT; Manoj Shrivani, Center for Independent Experts; Shona Patterson, East Carolina University		IDENTIFYING THE BOUNDARIES OF CORAL REEF CONSERVATION: A CONTINGENT VALUATION STUDY TO INVESTIGATE THE EFFECTS OF PERCEPTION OF SCALE AND MAGNITUDE OF REEF PROBLEMS ON WILLINGNESS-TO-PAY FOR FIJIAN REEF PRESERVATION PROGRAMS Carolyn Fonseca, University of Georgia	THE RHODE ISLAND SPECIAL AREA MANAGEMENT PLAN: A YEAR IN REVIEW Dave Beutel, RI Coastal Resources Management Council	
Presentation 4 4:30-4:50p	Michael McDonald, Global Health Services, University of Maryland Group Discussion, session until 6:30 PM.		ECONOMIC VALUES OF COASTAL EROSION MANAGEMENT Craig Landry, East Carolina University	Discussion	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Wednesday June 6th, 2012

Concurrent Session VII 1:30 –3:00pm

Track	Planning for Emerging Coastal Issues and Threats	Planning for Emerging Coastal Issues and Threats (second room)	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real World – Policy and Management Trends
Room	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title		LESSONS LEARNED FROM THE KING TIDES PHOTO INITIATIVE: USING HIGH TIDE IMAGES AND SOCIAL MEDIA TO RAISE AWARENESS ABOUT SEA LEVEL RISE		IMPROVING COMMUNITY PLANNING FOR SEA LEVEL RISE, FLOODING, AND COASTAL STORMS THROUGH A GRANT COMPETITION
Session Moderator	Steve MacLeod, Ecology and Environment, Inc.	Marina Psaros, San Francisco Bay National Estuarine Research Reserve	Julia Wyman, Rhode Island Sea Grant Legal Program/Roger Williams University School of Law	Stephanie Showalter Otts, National Sea Grant Law Center
Presentation 1 1:30-1:50p	IMPROVING RESPONSE CAPACITY TO NON-NATIVE MUSSELS IN THE WEST Carolynn Culver, California Sea Grant Extension Program		MAKING COMMUNICATION MAKE A DIFFERENCE: LESSONS FROM SOCIAL MARKETING Linda Maxson, Forterra	Tara Owens and Andy Bohlander, University of Hawaii Sea Grant Program
Presentation 2 1:50-2:10p	ASSESSING THE VULNERABILITY OF WEST COAST FISHERIES TO A CHANGING CLIMATE: CLIMATE IMPACTS ON THE PACIFIC WHITING FISHERY Kara Cardinal, University of Washington		THE SOCIAL COAST – IT'S <i>NOT</i> ANOTHER SOCIAL NETWORKING SITE Zac Hart, I.M. Systems Group, Inc.	Julia Peterson, New Hampshire Sea Grant

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Wednesday June 6th, 2012

Concurrent Session VII 1:30 –3:00pm

Track	Planning for Emerging Coastal Issues and Threats/ Defining and Measuring Ecosystem Services in the Context of Ecosystem Based Management	Planning for Emerging Coastal Issues and Threats (second room)	A Social Approach to Examining Our Coasts	Ecosystem Services in the Real Word – Policy and Management Trends
Room	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title				
Session Moderator	Steve MacLeod, Ecology and Environment, Inc.	Marina Psaros, San Francisco Bay National Estuarine Research Reserve	Julia Wyman, Rhode Island Sea Grant Legal Program/Roger Williams University School of Law	Stephanie Showalter Otts, National Sea Grant Law Center
Presentation 3 2:10-2:30p	THE RESTORATION OF THE MOUTH OF THE HOUSATONIC RIVER, CT: ONE POINT AT A TIME Jennifer H. Mattei, Sacred Heart University		THE USE OF NETWORK-ENABLED TECHNOLOGIES IN FISHERIES MONITORING, CONTROL, AND SURVEILLANCE: A SOCIAL WEB APPROACH Shah Selbe, Center for Ocean Solutions, Stanford University	Robert Thompson, University of Rhode Island
Presentation 4 2:30-2:50p	VALUING COASTAL ECOSYSTEM SERVICES IN FLORIDA Grace Johns Hazen and Sawyer		EVALUATION OF COASTAL MANAGEMENT PROGRAMS IN XIAMEN, CHINA Long Zhou, NOAA	Discussion

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Wednesday June 6th, 2012

Concurrent Session VIII 3:30 –5:00pm

Track	Florida Focus Room 1 – including lessons from neighbors	Florida Focus Room 2	Florida Focus Room 3	Florida Focus Room 4	Florida Focus Room 5
Room	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title			WATERFRONT REVITALIZATION AND COASTAL SMART GROWTH: IMPLEMENTING COMMUNITY-BASED INITIATIVES THROUGH THE WATERFRONTS FLORIDA PROGRAM	VALUATION OF ECOSYSTEM SERVICES: INSIGHTS FROM MARINE AND ESTUARINE GOAL SETTING FOR SOUTH FLORIDA	BAY CARETAKERS AND KEEPERS: BISCAYNE BAY REGIONAL RESTORATION COORDINATION TEAM – A VOICE FOR THE BAY
Session Moderator	Ariana Marshall, Florida Agricultural and Mechanical University	Paul Hindsley, Eckerd College	Kenneth Walker, NOAA/OCRM	David Loomis, East Carolina University; Peter Ortner, University of Miami	Theresa Woody, DOI Office of Everglades Restoration Initiatives
Presentation 1 3:30-3:50p	RESOURCE MANAGEMENT ON THE TEXAS COAST: FROM OIL AND GAS LEASING TO CMSP Kate Zultner, Texas Coastal Management Program	ASSESSING THE VALUE OF RECREATION TRIPS IN THE COASTAL ZONE: AN APPLICATION OF BENEFIT TRANSFER Paul R. Hindsley, Eckerd College	Kenneth Walker, NOAA	David Loomis, East Carolina University	
Presentation 2 3:50-4:10p	COASTAL CLIMATE ADAPTATION: BUILDING THE PUERTO RICO CLIMATE CHANGE COUNCIL Kasey Jacobs, Puerto Rico Coastal Zone Management Program	EVALUATING BIOLOGICAL AND SOCIOLOGICAL CONCERNS IN THE SECTION 7 PROCESS: USING CONSERVATION UNITS TO PROTECT STURGEON POPULATIONS Jolvan Terez Morris, Florida Agricultural and Mechanical University	Julie Dennis, Waterfronts Florida Program	Grace Johns, Hazen and Sawyer	

TCS 23 DRAFT Conference Concurrent Sessions Schedule

Wednesday June 6th, 2012

Concurrent Session VIII 3:30 –5:00pm

Track	Florida Focus Room 1- including lessons from neighbors	Florida Focus Room 2	Florida Focus Room 3	Florida Focus Room 4	Florida Focus Room 5
Room	<i>Orchid C</i>	<i>Orchid D</i>	<i>Brickell South</i>	<i>Brickell Center</i>	<i>Brickell North</i>
Session Title					
Session Moderator	Ariana Marshall, Florida Agricultural and Mechanical University	Paul Hindsley, Eckerd College	Kenneth Walker, NOAA/OCRM	David Loomis, East Carolina University; Peter Ortner, University of Miami	Theresa Woody, DOI Office of Everglades Restoration Initiatives
Presentation 3 4:10-4:30p	BAHAMIANs AND CLIMATE CHANGE: AN ANALYSIS OF THE POLICIES AND ATTITUDES DRIVING COASTAL DEVELOPMENT Rhianna Neely, School of the Environment	BARRIERS TO MITIGATING FOR SEAGRASS LOSS IN FLORIDA Althea Hotaling, University of Florida	Joanne Semmer, San Carlos Island, a Waterfronts Florida Community	TBD	
Presentation 4 4:30-4:50p	SEA-LEVEL RISE IMPACT IN FRANKLIN COUNTY: FLORIDA'S FORGOTTEN COAST Ariana Marshall, Florida Agricultural and Mechanical University	Discussion	Discussion	Discussion	

PREPARING CALIFORNIA FOR ITS FUTURE COASTLINE

Adina Abeles*, Phyllis Grifman, Juliette A. Finzi Hart, Susanne Moser, Monique Myers, Susan Schlosser

Center for Ocean Solutions
Stanford University
99 Pacific Street, Suite 155A
Monterey, CA 93940
abeles@stanford.edu

Coastlines are exposed to changes in sea level rise, altered precipitation patterns, and intensified storms and storm surge. These direct impacts produce numerous secondary effects, including infrastructure damage, coastal flooding, salt water intrusion, and the “squeezing out” of coastal ecosystems as engineered structures prevent their landward migration. To plan for these impacts, it is not enough to have a scientific understanding of climate change. Of equal importance is coastal decision-makers’ ability to apply the science where daily decisions affect the coastline’s adaptive capacity. To this end, we conducted a statewide survey, in partnership with 15 California local, regional and state-based organizations aimed at coastal professionals, to understand the scientific information, data, training, and technical assistance needs as well as barriers coastal communities face in developing strategies for addressing anticipated climate change impacts. This survey builds on a previous survey conducted in 2005 and provides the first-of-its-kind longitudinal analysis of climate change adaptation planning for the state of California. Decision-makers in California's coastal areas generally recognize that climate change will impact their communities and are at different stages in developing and/or implementing climate change adaptation plans. Many communities understand the need to include the best available science in their planning and decision-making. The results of the 2011 survey and comparisons with the earlier one give insights into what decision-makers identify as their science needs and the manner in which they can utilize this information, allowing us to find more useful ways of making the science more accessible to these end-users.

AQUATIC VEGETATION, ECOSYSTEM SERVICES, AND MANAGEMENT IN A GREAT LAKES ESTUARY

Ted Angradi*, David Bolgrien, Brent Bellinger

United States Environmental Protection Agency, Office of Research and Development
Mid-Continent Ecology Division
6201 Congdon Blvd
Duluth, MN 55804

As part of EPA Office of Research and Development's Sustainable and Healthy Communities Research Program we are quantifying ecosystem services associated with aquatic vegetation in the St. Louis River Ecosystem (SLRE), a large freshwater estuary of western Lake Superior, and we are exploring how coastal communities benefit from those services. Our research examines and quantifies the extent, distribution, and nutrient processing by submerged and emergent aquatic vegetation in the estuary. Aquatic vegetation in the SLRE is a key structural and energetic component in an aquatic food web supporting a valuable sport fishery, wildlife habitat-related benefits, including endangered species, aesthetic benefits, and water quality. We are using a variety of tools including, hydroacoustic mapping, direct surveys, land use analysis and wetland process measurements (e.g., decomposition, nitrogen fluxes, exo-enzymatic activity) to quantify the functional relationships linking biophysical drivers to structural and biochemical attributes of aquatic vegetation and thence to ecosystem services that benefit coastal communities. Our goal is to provide operationalized functions and models that support ecosystem-based management of the estuary including community land use planning and aquatic and riparian restoration.

OCEAN FRONTIERS FILM & DISCUSSION: LESSONS LEARNED ON MARINE SPATIAL PLANNING AND ECOSYSTEM-BASED MANAGEMENT

Karen Anspacher-Meyer

Green Fire Productions
karen@greenfireproductions.org
www.ocean-frontiers.org

The new film from Green Fire Productions, *Ocean Frontiers: The Dawn of a New Era in Ocean Stewardship*, is capturing the imagination of people across the country. *Ocean Frontiers* is an unparalleled tool to engage, educate, inspire and mobilize people around marine spatial planning and ecosystem-based management. Join the filmmaker to watch a 20-minute version of this feature film. A panel from the four regions featured in *Ocean Frontiers* will discuss lessons learned in each of these case studies and respond to audience questions. Participants will also hear how they can use the film in their outreach and education efforts. *Ocean Frontiers* is an inspiring voyage to seaports and watersheds across the country to meet industrial shippers and whale biologists, pig farmers and wetland ecologists, sport and commercial fishermen, reef snorkelers and many more—all of them embarking on a new course of cooperation, to sustain the sea and our coastal and ocean economies. Green Fire Productions, the producer of *Ocean Frontiers*, released the film in 2012 with Oregon Governor Kitzhaber. The film has since screened across the country in events with members of Congress, fishermen, state legislators, scientists, industry leaders, farmers, natural resource agencies, and more. The consistent take-aways for audiences include: Collaboration and solutions are possible with the right balance of listening to all sides and scientific research; data is important; everyone's efforts matter; and perhaps most importantly, there is hope. The four stories include: Boston Harbor, Florida Keys, Iowa and the Gulf of Mexico, Port Orford, Oregon.

FACTORS AFFECTING LOCAL PERMIT OWNERSHIP IN BRISTOL BAY, ALASKA: AN ANALYSIS OF BASED ON INTERVIEWS WITH LOCAL RESIDENTS

Breana Apgar-Kurtz*, David Fluharty, and Gunnar Knapp

School of Marine and Environmental Affairs
University of Washington
3707 Brooklyn Avenue
Seattle, WA 98105
BreanaAK@uw.edu

Since the first Bristol Bay limited entry salmon permits were issued in 1975, many of these permits have been sold to non-locals, eroding the economic base for many communities in Bristol Bay. Bristol Bay Economic Development Corporation (BBEDC) has been trying to create economic opportunities in some of these communities and has started a permit loan program to assist Bristol Bay watershed residents in buying permits. This program has not been meeting its targets for the number of people assisted with buying a permit, but the factors limiting participation are unclear. The primary goal for this thesis research project is to gain insights into why people in the Bristol Bay region choose to enter or exit the fishery and how to effectively increase local permit ownership in the commercial salmon fishery. This research is based primarily on semi-structured, confidential interviews of five different groups of people who reside in the Bristol Bay watershed. These groups are: current permit holders, retired fishermen, youth (ages 18-25), current crewmembers, and BBEDC staff with a particular emphasis on youth (ages 18-25) who are permit holders or crewmembers. Each group will be asked about their experience in the fishery, changes in the fishery and their community they have noticed over time and how they feel about permits being sold to non-locals as well as a separate set of questions corresponding to their specific situation. The goal is to better understand the factors affecting participation in the BBEDC Permit Loan Program and how factors affecting fishery participation vary between watershed villages. Partially supported by Dr. Gunnar Knapp, Institute of Social and Economic Research at the University of Alaska Anchorage.

CHARACTERIZING THE SOCIAL LANDSCAPE AND LAND COVER OF BARRIER ISLAND COMMUNITIES

Andrew Bennett

The Institute for Coastal Science and Policy
East Carolina University
East Fifth Street
Greenville, North Carolina 27858
Bennetta07@students.ecu.edu

Many of the Atlantic coast's Barrier Islands have undergone a shift in place identity from elite getaway destinations and small fishing communities to tourist driven place based destinations. This has caused shifts, most notably, in demographic, social, and economic makeup of these communities over the past 30 to 40 years. The shift in place identity has caused not only a change in the social landscape, but on the physical land cover of these barrier island communities. The change in preference towards coastal development on these barrier islands has placed much, if not all, of this development at the forefront of coastal hazards. As a way to counteract federal expenditures on vulnerable coastal Barrier Islands the Coastal Barrier Resources Act was enacted in 1982 to restrict development. As a result, the distributions of land cover change in these units compared to those in non designated units are different. While the physical land cover of these areas is known, the social landscape characteristics in these areas have not been examined. The purpose of this paper is to examine the physical and social land cover patterns that have occurred as a result of this shift in place identity. Census block data from 1990 and 2000 as well as land cover a cluster analysis will be used to generate groupings of the data with similar characteristics to examine how the social landscape and land cover relate to one another for different groupings, as well as the impact of the Coastal Barrier Resources Act.

TWEET-FACE; USING SOCIAL MEDIA TO IMPROVE OCEAN STEWARDSHIP

Carli Bertrand* and Ellen Gordon

Coastal America
Reporters Building, 300 7th Street, SW Suite 680
Washington, DC 20024
ellen.gordon@dm.usda.gov

One of the greatest challenges to restoring and protecting the ocean, our coasts and Great Lakes is the lack of public understanding and awareness of the value of these ecosystems. Today, we enjoy greater access to information than ever before and the people who seek to address these environmental challenges have new tools at their disposal. Social Media, the use of web-based and mobile technologies, has turned formerly one-way communication into an interactive dialogue. These platforms provide managers with the opportunity to not only educate but to understand how the forces of human values, beliefs, and attitudes shape coastal decision making. In concert with more than 20 aquariums and marine education centers across North America the Coastal America Partnership, a government-led partnership of federal agencies, state and local governments and non-governmental organizations, is working to develop and convey accurate information and consistent messages on coastal and marine issues. Through a combination of traditional programs and state of the art social media tools, this unique government-aquaria alliance is working to continually inform the public on critical issues from climate change and sea-level rise to invasive species and habitat loss. The presentation will explore how Coastal America is using social media to extend consistent messages to the public, promote understanding of coastal and marine issues and provide a valuable mechanism to engage citizens in the coastal dialogue. The speaker will address opportunities to utilize these new outreach platforms to reach broader audiences, address diverse perceptions, improve understanding of societal values and engage coastal communities to build a foundation for improved stewardship.

THE RHODE ISLAND OCEAN SPECIAL AREA MANAGEMENT PLAN: A YEAR IN REVIEW

Dave Beutel* and Michelle Carnevale

RI Coastal Resources Management Council
University of Rhode Island Coastal Resources Center and
Rhode Island Sea Grant
Narragansett Bay Campus
220 South Ferry Road
Narragansett, RI 02882
M.Carnevale@crc.uri.edu

In July 2011, the National Oceanic and Atmospheric Administration (NOAA) formally approved the Rhode Island Ocean Special Area Management Plan (Ocean SAMP), the first offshore marine spatial planning document in the United States. The Ocean SAMP maps the state's ocean waters and surrounding federal waters in order to identify priority future uses for this area, such as renewable energy development, and guide balanced management of its natural resources and human uses. The Ocean SAMP now serves as a model for proactive, research-based marine planning efforts nationwide. In the year since it has been adopted by the Rhode Island Coastal Resources Management Council (RI CRMC) and approved by NOAA, the Ocean SAMP has continued to accomplish many milestones including:

- Increasing RI CRMC's federal consistency review over proposed projects in the federal waters through use of a mechanism under the Coastal Zone Management Act called a Geographic Location Description;
- The creation of a Fishermen and Habitat Advisory Board;
- Streamlined the review process for renewable energy projects in state waters;
- Informed the federal leasing process off the coast of Rhode Island and Massachusetts; and
- Serving as model for other states interested in marine spatial planning.

This presentation will describe the accomplishments of the Ocean SAMP to date and the benefits marine spatial planning has provided to the State of Rhode Island and its citizens.

INVESTIGATING LIVING SHORELINES AS A FORM OF SHORELINE PROTECTION IN NEW JERSEY

Wes Bickford*and Dorina Frizzera

New Jersey Department of Environmental Protection
Coastal Management Office
401-07D- NJDEP - PO Box 420
Trenton, NJ 08625-0420
wesley.bickford@dep.state.nj.us

Developed shorelines are often stabilized with hardened structures such as seawalls, bulkheads, revetments, rip-rap, gabions, and groins to protect coastal properties from erosion. While hardened structures reduce property damage, the rate of coastal erosion typically increases near stabilization structures. Additionally, tidal wetland migration is impeded because coastal development, shore protection structures, and resultant changes in sedimentation interfere with the dynamic equilibrium of the shore. Many states are combating coastal erosion and wetland loss through the creation of living shorelines. Living shorelines provide long-term protection through restoration or enhancement of vegetated shoreline habitats. They are also thought to be resilient to sea-level rise as their gradual land-water elevation allows migration of wetlands over time. There are many barriers to implementation of living shorelines in New Jersey, such as a lack of understanding of the many types of living shorelines, cost, and the difficulty in obtaining permits for construction. The New Jersey Coastal Management Office will develop a project to categorize the region with respect to energy regime and provide information about the economic and environmental tradeoffs of different approaches to stabilization. Using data on coastal erosion rates, priority areas will be identified where living shorelines projects will be piloted. These projects will then be monitored for effectiveness. As a result, the Department can assess which stabilization techniques make sense in each energy regime. The main deliverable will be a technical handbook for marine contractors informing them of which structures are appropriate and the economic and environmental tradeoffs of different approaches.

CLIMATE ADAPTATION AND SHORELINE CHANGE IN THE REPUBLIC OF THE MARSHALL ISLANDS

Andy Bohlander* and Murray Ford

Coastal Processes Extension Agent & Shoreline Specialist
University of Hawaii Sea Grant College Program
2525 Correa Road, HIG238
Honolulu, HI 96822
andrewbo@hawaii.edu

The University of Hawaii Sea Grant College Program (UHSG) in partnership with the College of the Marshall Islands, provides extension and outreach services in the Republic of the Marshall Islands (RMI). The RMI is one of only four countries whose population predominantly lives on atoll islands. Atoll islands are low-lying accumulations of largely unconsolidated sand and gravel and are widely considered to be highly vulnerable to the impacts of climate change, particularly sea level rise. Within the Marshall Islands the bulk of the population lives on two densely populated islands, Majuro, on Majuro Atoll and Ebeye Island on Kwajalein atoll. The urban shoreline of Majuro has been highly modified, with recent work by Ford (2011) indicating significant increases in land area as a result of reclamation of land on adjacent reef flats. The rapid growth of island area is most apparent within the most highly populated sections of Majuro where ad hoc and largely unplanned and unregulated reclamation has occurred post-WWII. There is growing awareness of climate change impacts within the RMI and the need for the development of adaptation strategies. However, there has been limited success in the development and implementation of effective coastal management strategies. Historically there has been limited regulation of potentially erosion-driving activities such as nearshore mining of sand and aggregate at both a commercial and household scale. Within recent years demand for sand and aggregate has led to both the importation of materials from elsewhere in the Pacific as well as continued and expanded nearshore mining. The impacts of mining of sand and aggregate from nearshore sections of Majuro lagoon are poorly understood. Here we discuss documented shoreline change around Majuro atoll. Ford (2011) provides a detailed analysis of shoreline change based on aerial photographs and satellite imagery from 1967-2006. We also discuss how to effectively manage local activities when the signature of local anthropogenic impacts within the coastal zone is in many cases analogous with expected impacts of global climate change.

MUNICIPAL RESPONSES TO A CHANGING CLIMATE IN THE COASTAL ZONE OF THE NORTHEAST AND BAY OF FUNDY

Kristen Bonjour,* Julia Wyman, and Susan Farady

Marine Affairs Institute/Rhode Island Sea Grant Legal Program
Ten Metacom Avenue
Bristol, RI 02809

Coastal municipalities are on the front-line of coastal climate change and need to accelerate their efforts to adapt their land use laws, infrastructure, policies, and programs to these changing environmental conditions. This poster will demonstrate some of the innovative ways coastal communities in New England are adapting to climate change. This poster will present preliminary findings of research undertaken by the Gulf of Maine Council on the Marine Environment/US Association of Delegates to the Gulf of Maine Council on the Marine Environment, Northeast Regional Ocean Council, Roger Williams University School of Law, StormSmart Coast Network, and Clean Air-Cool Planet, funded by NOAA's Climate and Societal Interactions Program (CSI). Primarily, this poster will present some of the legal and policy research conducted during 2011-2012 for this project. It will provide other coastal municipalities ideas for ways to adapt to climate change.

VARIATION IN CULTURAL KNOWLEDGE OF COASTAL HAZARDS ON HATTERAS ISLAND, NC.

James Brinkley

Coastal Resource Management
East Carolina University
Flanagan 165
Greenville, NC 27858
brinkleyj93@students.ecu.edu

Coastal areas consist of unique characteristics that present property owners with a more complex set of risks than many inland areas. A large portion of this region's population that are seasonal-only residents or are merely property owners. With more people permanently migrating to the coast or purchasing vacation homes, there are more people who must assess the risks of an unknown environment, possibly without the use of a single shared cultural understanding of these risks. Recent topics in coastal management discuss communicating science to the public more effectively. Many have disseminated scientific knowledge of the hazards of living along the coast, as proponents of changes in development practices. However, these changes are slow to occur, if they occur at all. Learning what existing knowledge coastal property owners possess may help determine the science which needs to be communicated and how best to do so. The objective of this study is to determine the shared knowledge of coastal natural hazards among resident and nonresident coastal property owners; and to determine the differences between this shared knowledge and that of the scientific community. Using cultural consensus analysis of 40 true/false coastline processes and natural hazard statements, variation in cultural knowledge of coastal property owners of Hatteras Island, NC are identified. The cultural consensus of these groups is then compared to a scientific consensus of the same 40 statements.

CZMA'S LONE DEPARTURE: THE ALASKA COASTAL MANAGEMENT PROGRAM

Liz Brown-Pickren

Coastal Resources Management Program
Institute for Coastal Policy and Science
East Carolina University
252 Flanagan
Greenville, NC 27858
brownpickrene09@students.ecu.edu

The Alaska Coastal Management Program expired in July, 2011, resulting in the first withdrawal from participation in the CZMA National Coastal Management Program in forty years of existence. Factors behind the tumultuous history of the ACMP are offered in a comparison between two of the local entities formed to write the regional management plans from an insider perspective. The Aleutians West Coastal Resource Service Area and the Bristol Bay Coastal Resource Service Area cover similar geographies in Western Alaska but produced highly dissimilar management objectives, demonstrating the flexibility of the NCMP. Conflicts between local entities and state government are evaluated for their influence on the demise of the ACMP and the potential for future reincarnation of the program is discussed.

DO CURRENT WASTE CONTROL INITIATIVES PROTECT ECOSYSTEM SERVICES IN URBAN WATERS?

Richard Burroughs

Department of Marine Affairs
University of Rhode Island
Kingston, RI 02881
rburroughs@uri.edu

The evolving institutional settings for management of water quality adjacent to New York, Providence, and Baltimore/Norfolk are examined. Controlling anthropogenic nitrogen flux to these waters could significantly enhance ecosystem services. A retrospective analysis of governance changes shows that the Marine Protection Research and Sanctuaries Act, Ocean Dumping Ban Act, and sections of the Clean Water Act may be seen to have had significant influences on nitrogen discharges in many, but not all, instances. These results indicate that existing federal law can catalyze management initiatives with largely positive results for ecosystem services. Furthermore, managers may use the findings here to assess the potential of other legislatively mandated and ongoing coastal programs to advance ecosystem services.

ASSESSING THE VULNERABILITY OF WEST COAST FISHERIES TO A CHANGING CLIMATE: CLIMATE IMPACTS ON THE PACIFIC WHITING FISHERY

Kara Cardinal*, Lara Whitely-Binder, Emma Timmins-Schiffman and P.Sean McDonald

School of Marine and Environmental Affairs
University of Washington
306 North 23rd Street
Mount Vernon, WA 98273
kbloch@uw.edu

Changing climatic conditions may affect the productivity and distribution of highly productive fisheries found in marine waters along the U.S. West Coast. Impacts of concern include alteration of coastal and marine habitats, shifts in abundance and distribution of marine species, changes in life cycle stages, and increased competition with invasive species. Adapting fisheries to climate change will require understanding the extent to which fisheries are vulnerable to climate change and what factors contribute to that vulnerability. It is valuable to know the degree to which a fishery experiences changing climatic conditions (exposure), how the fishery changes in response to changing climatic conditions (sensitivity), and the fishery's ability to adjust to changing climatic conditions (adaptive capacity). The combined interaction of these three components ultimately determines a fishery's vulnerability to climate change. This project looks at the Pacific whiting fishery as a case study to evaluate the exposures, sensitivities and adaptive capacities of both the whiting stock, as well as the human dimensions of the fishery. Exposures and sensitivities were determined through extensive literature review. In order to determine the adaptive capacities of the fishery, NOAA, along with West Coast Sea Grant programs, convened a workshop which brought together fisheries scientists, managers and commercial fisherman.

BEACH ECOLOGY AROUND THE NATION: A CRITICAL LOOK AT STATE-LEVEL MANAGEMENT

Clara Cartwright*, Chad Nelsen, and Rick Wilson

Surfrider Foundation
P.O. Box 6010
San Clemente, CA 92674-6010
ccartwright@bren.ucsb.edu

Sandy beach ecosystems are threatened by multiple anthropogenic stressors, decreasing their ability to provide services to humans and adjacent habitats. The Surfrider Foundation's State of the Beach Report evaluated state-level management for beach ecology using a refined rating system that focused exclusively on sandy beach habitat. Each state was assigned an "Information Score" of 1 - 10 based on its policies relevant to beach ecology, the information it gathers to understand the ecological status and trends of its beaches, and the degree to which the state incorporates that information into management actions. Additionally, three case studies examine beach grooming, beach nourishment, and the use of ecological indicators in beach monitoring and give recommendations for future actions. Our analysis shows that state governments made little progress since 2004 in managing sandy beach ecosystems. Sixty-nine percent of states scored three or lower, and no state received a score above six, indicating a dearth of information, policies, and management actions protecting beach ecology. States need to recognize the beach as a valuable ecosystem and utilize existing scientific knowledge to improve coastal management strategies. The case studies find that beach grooming in Southern California has become more ecologically friendly; beach nourishment projects do not properly evaluate and mitigate impacts on beach ecology; and coastal management lacks comprehensive beach monitoring with ecological indicators. Recommendations include best management practices for beach grooming and beach nourishment, guidelines for an indicator-based beach ecology monitoring program, and a call to integrate science and collaboration into management practices.

DEVELOPING AND ASSESSING REGULATORY AND OUTREACH STRATEGIES FOR PREVENTING THE SPREAD OF AQUATIC INVASIVE SPECIES THROUGH BOATING

Samuel S. Chan*, Lisa DeBruckere, Glenn Dolphin, Rick Boatner, Tania Siemens, Dan Hilburn and Jennifer Lam

Oregon State University
Oregon Sea Grant College Program and Extension Service
307 Ballard Hall Corvallis, OR 97330
samuel.chan@oregonstate.edu

Invasive species cost the United States hundreds of billions of dollars annually. Hundreds of millions of dollars in economic impacts to the Columbia River (USA) basin are anticipated, should the zebra and quagga mussels become established. Nearly, 50% of all funds spent in Oregon from 2008-2010 on invasive species were on management, and only 12% was expended on prevention and early detection and rapid response (EDRR). Yet prevention activities are among the most cost-efficient. Compared to terrestrial invasive species, aquatic invasive species (AIS) often pose a more challenging threat due to the difficulty of treating infested waters without harming other organisms. Both motorized and non-motorized boats are significant vectors of invasive species to new water bodies and across state lines. Only since 2010 has Oregon, USA joined many western states promoting a combination of invasive species outreach (e.g. “Clean, Drain and Dry“ your boat before moving to another water body) and regulatory approaches (boat inspection stations). Public awareness and concern for aquatic invasive species is high in Oregon, but many institutional, legal and personal barriers exist that prevent people from taking action. During 2010, less than one in three boats in Oregon voluntarily stopped for inspection. Prior to 2011, mandatory boat inspections at check stations for AIS and penalties for non-compliance were perceived as unconstitutional in Oregon. Working with attorney generals and stakeholders during the 2011 legislative session, legislators passed House Bill 3399, requiring boaters to stop at inspection stations or risk be fined. Initial 2011 results showed compliance rates increased from less than 33% to 43%. The remaining boats had to be stopped by enforcement officials for inspection. Our paper examines research on barriers to and combinations of mandatory inspections, outreach, and voluntary actions that lessen the threat and spread of aquatic invasive species.

PLANNING FOR MYSTERIOUS CHANGE: THE CHALLENGE OF UNDERSTANDING AND SHAPING SOCIETAL RESPONSES TO OCEAN ACIDIFICATION

Patrick Christie

School of Marine and Environmental Affairs and Jackson School of International Studies
University of Washington
patrickc@uw.edu

Unlike many changes, such as fishery overexploitation or habitat degradation, ocean acidification is difficult for resource users, scientists and policy makers to observe and fully comprehend. Planning for relatively slow, but profound and long-lasting, environmental change is likely to be challenging. The primary cause of ocean acidification (i.e., carbon dioxide emissions) can be distant from the place of impact (e.g., coral reefs). At any tropical location, acidification impacts are one of many considerations and may erode commitment to successful ocean management practices, such as marine protected areas. Why protect a local reef from overfishing if it will bleach or erode anyway? This presentation discusses, while accepting considerable uncertainties, the potential implications of acidification for tropical coastal societies, their possible responses, and the opportunity for place-based policy responses to acidification. Understanding the human dimensions of ocean acidification is essential to shaping human adaptation. Social ecological research, employing a mixture of empirical and scenario-based methods, will be necessary to understand perceptions and societal responses to ocean acidification. Tropical resource management policies will need to be flexible and balance multiple considerations including economic development, food security and biodiversity conservation which are increasingly impacted by both local and remote processes that cause environmental change at various rates.

LESSONS LEARNED ABOUT SHARING OCEAN SPACE AND PLACE FOR THE COMMON GOOD

Flaxen Conway*, Carrie Pomeroy, Madeleine Hall-Arber, and Tom Murray

Oregon State University / Oregon Sea Grant
Marine Resource Management Program
104 COAS Admin Bldg
Corvallis, OR 97331
fconway@coas.oregonstate.edu

First it was the territorial sea. Now it's the outer continental shelf (OCS). Once viewed as the frontier, these days the ocean is increasingly viewed as highly valuable real estate. Ask existing ocean users about ocean space and place, and some emphasize how vast the ocean is while others lament how crowded it's become and that adding one more ocean use will push existing users and the ocean itself beyond what it can handle. Yet new uses and users have and will come, and there will be benefits and costs. One of these new uses will be marine renewable energy: off-shore wind, wave, tidal or current energy. This presentation will report on the lessons learned from a 2009-2011, BOEMRE-funded, nationwide research project regarding ocean use on the OCS. We studied the literature related to ocean space use conflicts, gathered existing geospatial data, and engaged three target stakeholder groups of existing ocean users: commercial non-fishing users, commercial fishing users, and non-commercial users. In an effort to access new contextual data, we queried people who are engaged in shipping and marine trade, commercial fish harvesting and processing, marine research, and marine recreation on how they characterize the ocean place and space that they use. We asked them for examples of existing conflict and cooperation essential to surviving and thriving on the ocean. And we encouraged them to share strategies for communication and engagement that avoid or mitigate conflict and maximize benefits.

NOAA'S NATIONAL COASTAL POPULATION REPORT

Kristen Crossett and Kate Haber*

National Ocean Service, NOAA
1305 East West Hwy
Silver Spring, MD 20910

Coastal areas are home to a variety of unique ecosystems, providing our communities and economy with a wealth of natural resources. We have come to depend on these resources to support a robust U.S. economy through waterborne commerce, energy and mineral production, tourism and recreation, and employment related to these activities. These, coupled with the natural beauty of the coast, are what drive the population to visit and reside in these areas. Current population estimates indicate that approximately 53% of the population resides in coastal watershed counties which make up 17% of the U.S. land area (excluding Alaska). Although this rate of growth is relatively the same as inland counties, it is occurring in a much smaller land area, resulting in a much greater density in these ecologically sensitive and economically important areas. Public policymakers and coastal managers are confronted with the daily task of finding a balance between benefiting from economic and population growth while mitigating the effects of this growth on coastal environments. Managing increased demands on resources is becoming increasingly complex and requires analyses of demographic data. Population estimates and projections can provide critical information for decisions makers about recent and projected demographic trends along the coast. In Spring 2012, NOAA's National Ocean Service will release a new publication on the U.S. coastal population, examining socioeconomic trends in both coastal watershed counties and the 100-year flood plains along the coast. This report will be the first time that Census 2010 numbers are published within this coastal geographic context and will serve as a reference document for coastal managers and federal and state agency communications and legislative staff. This report is developed in partnership with the U.S. Census Bureau and is an update to the 2004 publication, *Population Trends along the Coastal United States: 1980-2008*. Statistics and summary socioeconomic information highlighting these contrasting geographies will be presented.

IMPROVING RESPONSE CAPACITY TO NON-NATIVE MUSSELS IN THE WEST

Carolynn S. Culver*, Leigh T. Johnson, Jodi L. Cassell and Heather Lahr

California Sea Grant Extension Program
Marine Science Institute, University of California
Santa Barbara, CA 93106-6150
cculver@ucsd.edu

Non-native invasive species (NIS) create economic and ecological impacts on coastal ecosystems worldwide. Notably, quagga (*Dreissena bugensis*) and zebra (*Dreissena polymorpha*) mussels continue to alter aquatic ecosystems and devastate power and water delivery systems as they expand their range in the United States. Relatively recent invaders to the West, early efforts have focused on preventing further spread of these pests. However, these mussels are now present in 25 water bodies in California, impacting water delivery to more than 17 million coastal citizens and restricting recreational water activities. Planning and implementing eradication and control strategies are also critically needed. To enhance the capacity to manage these NIS, we developed a participatory three-tiered project that included 1) synthesis of information about eradication and control strategies for NIS, 2) a workshop to prepare managers for implementing various strategies and 3) development of short information sheets detailing implementation of the strategies. The practical expertise and knowledge of lake managers was incorporated via interviews, a survey and workshop sessions asking participants to frame their own concepts for information sheets and to identify means for implementing the strategies. Through these efforts, managers were able to focus on the specific requirements – permits, equipment, training, staffing – for particular management strategies. They also learned from one another and strategized together, enhancing regional communication and management of invasive mussels. This participatory project serves as a model for improving the response to anticipated and realized threats of coastal NIS, and facilitates improved community capacity to maintain coastal ecosystem services.

INTERNATIONAL TRADE IN SPINY DOGFISH AND FISHERY MANAGEMENT ASPECTS

Andrea Dell'Apa* and Jeffrey Johnson

ICSP-Institute for Coastal Science and Policy
East Carolina University, Flanagan 250
Greenville, NC 27858

The spiny dogfish is a shark of significant international commercial value. Its management has international relevance, due to recent concern over its conservation status. The major demand for its meat is in the EU, where the species have been drastically over-fished. The US is one of the major exporters to this market, with a high demand for large adult females. The sex selectivity of this demand led to over-exploitation of the US Atlantic stock, forcing the adoption of a Fishery Management Plan (FMP) in an attempt to rebuild stocks. This is the only existing long-lasting regulation for the species worldwide. The species biological characteristics (long gestation period, slow growth rate), and the targeting of adult females, endanger species survival and the fisheries sustainability. The employment of new tools to combine fishery management and trade may be useful for fishery managers. We analyzed historical data of dogfish imports by EU's countries using social network analysis. In investigating the effects associated with the introduction of the US-FMP, two trade networks were created and compared: the pre- and the post-FMP. Results show that after the introduction of this regulation a number of new countries emerged as new exporters to the EU to replace declines in US exports, while several European countries emerged as new significant importers. This paper discusses the value of network analysis in the study of the evolution of emerging markets as it relates to regulatory changes.

COASTAL AND MARINE SPATIAL PLANNING EFFORTS: THE TRADE-OFFS BETWEEN STATUTORY AND ADMINISTRATIVE AUTHORITY

John A. Duff,* Jennifer Crawford

Environmental, Earth and Oceans Sciences Department
University of Massachusetts Boston
100 Morrissey Blvd.
Boston, MA 02125
John.Duff@umb.edu

In recent years a number of coastal states have engaged in planning and resource stewardship efforts that go beyond single sector resource-oriented management. Often, proponents of such efforts have laid claim to the banner of “first” in characterizing their respective coastal management plans. In particular, California, Massachusetts, New York, Oregon, and Rhode Island have each engaged in coastal and marine spatial planning (CMSP) management approaches that can be characterized as “firsts” in some way. This paper examines bases upon which these claims ring true. It employs a set of chronologies designed to inform policy-makers, researchers, resource users and the general public with the context and contents of various state ocean management regimes. For each state, the impetus, apparatus, and status of the state’s planning efforts are evaluated. In each case CMSP has been authorized by the state. But the construction and discretion related to those authorizations varies. This evaluation assesses each state’s CMSP apparatus to identify how the five states exert legislative control over their respective CMSP efforts. To the degree that substantial variation is identified among the five states, the paper highlights the control-status relationship to elicit signs of legislative control that may influence the sought after objectives of a given state’s CMSP management endeavor.

WORKING WATERFRONTS IN MICHIGAN: ANALYSIS OF VALUE, VULNERABILITY, AND SUSTAINABILITY

Elizabeth F. Durfee

Michigan Coastal Management Program
Office of the Great Lakes
Department of Environmental Quality
525 West Allegan Street
P.O. Box 30473
Lansing, MI 48909
email: DurfeeE@Michigan.gov

Michigan's 3288-mile coast hosts many culturally and economically significant working waterfronts. Increasingly, the uses and activities that comprise working waterfronts, and that depend on access or adjacency to the water, are threatened by issues such as competing land uses, higher property values, and shifts in population. In order to understand both the value of working waterfronts and the vulnerability of specific locations, a methodology that identifies trends in conversion from water dependent to non-water dependent uses was developed. The methodology was applied across the state to obtain qualitative and quantitative information that is needed to develop informed programs or policies to ensure options for land use along the coast are preserved and permanent loss of working waterfronts is avoided. A toolkit of economic and policy options to preserve working waterfronts will be developed to enable coastal communities to protect their working waterfronts. In addition, strategies to ensure that coastal communities are poised to sustain and enhance their sense of place, capitalize on historic waterfront culture, and adapt to changes in lake level will be identified. This work will contribute to efforts that aim to promote long-term sustainability in coastal communities, and will increase the understanding of working waterfront issues in the Great Lakes Region.

WORKING WATERFRONTS INITIATIVES IN ALABAMA: PROTECTING ENVIRONMENTAL, ECONOMIC AND CULTURAL RESOURCES

Marie L. Dyson*and Jody A. Thompson

Auburn University Marine Extension and Research Center/Sea Grant
4170 Commanders Drive
Mobile, Alabama 36615
mnosyd@comcast.net

Like many coastal states, Alabama has faced threats and disturbances to its ecological, economic, social and cultural structures. Natural disasters, such as Katrina, technological disasters, such as the Deepwater Horizon Oil Spill and the economic recession have impacted coastal communities that rely on access to the water for their livelihood. In addition, coastal Alabama has experienced population growth and land use competition for waterfront access. Water-dependent businesses along the Alabama coast are wide-ranging and include international industrial shipping, commercial and recreational charter boat fishing, nature tourism, and other maritime interests. Generations of families, based in traditional fishing towns like Bayou La Batre, Alabama, operate fishing boats, seafood processing facilities, ship construction and repair, and other support industries. As diverse as they may be, these working waterfronts have one thing in common: their tremendous impact upon the State's economy and socio-cultural heritage. In response to constituent concerns, Auburn University Marine Extension and Research Center (AUMERC) and Mississippi-Alabama Sea Grant Consortium (MASGC) have organized workshops with stakeholders, provided technical assistance to planners and coastal managers, funded working waterfront inventories and socio-economic impact studies and facilitated the formation of a legislative committee, the Alabama Waterfront Access Study Committee. This Committee has provided recommendations to the Alabama Legislature that include management-based tools, incentives and techniques that will serve to protect and preserve working waterfronts and waterfront access. This presentation will share case studies of efforts with coastal Alabama communities that have assisted them in preserving their working waterfronts.

EVALUATION OF MITIGATION AND ADAPTATION STRATEGIES FOR COMMUNITIES ON THE DELAWARE BAY IN RESPONSE TO COASTAL & CLIMATE CHANGE HAZARDS

Steve Eberbach*, Jim Eisenhardt, Mark Osler, Doug Plasencia,
Michael Powell, Larry Trout, Drew Whitehair

Michael Baker, Jr., Inc.
8000 Regency Parkway
Suite 200
Cary, NC 27518
seberbach@mbakercorp.com

The State of Delaware is currently confronted with serious challenges facing seven coastal communities along the Delaware Bay. The Delaware Department of Natural Resources and Environmental Control is completing a complex economic evaluation of coastal mitigation and adaptation alternatives which address sea level rise, flooding, and coastal erosion hazards. This evaluation includes analysis of 1,580 structures, 60 miles of roadway, and significant natural resource systems such as Prime Hook National Wildlife Refuge. Flood and erosion damage reduction modeling is being performed to evaluate the risk-reducing benefit of four management alternatives including beach renourishment and planned retreat. These results are being used to develop a comprehensive benefit-cost analysis which accounts for damages avoided as well as economic, financial, and natural resource impacts. Results from this project will guide the State of Delaware in allocating public funds toward long-term, effective management alternatives and provide valuable insight to key decision-makers on actions which reduce community vulnerability.

A SOCIAL NETWORK ANALYSIS OF NOAA'S REGIONAL COLLABORATION INITIATIVE

Chris Ellis*and Nicole D. Bartlett

NOAA Coastal Services Center
2234 S. Hobson Avenue
Charleston, SC 29405
chris.ellis@noaa.gov

Social network analysis (SNA) is a tool for evaluating relationships and connectivity. Commonly, by means of a survey, it maps relationships among people to show how information flows, and illustrates what aspects of a communication network are essential for connectivity and information flow. A graphic representation of these social links (sociogram) reveals important attributes of the network, such as the leaders and connectors, the clusters of connectivity, and those who are on the periphery, or isolated and unconnected from the network. This analytic tool has afforded NOAA the ability to understand the extent of communication across line offices, within specific focus areas (e.g., workgroups, or subteams within a regional team), and across regional geographies. This SNA was conducted in the spring of 2011 on behalf of NOAA's regional collaboration initiative. Questions centered on communication activity across NOAA's strategic goals, including climate adaptation and mitigation, healthy oceans, weather-ready nation, and resilient coastal communities and economies. Through these strategic goals, NOAA strives toward a future where people, communities, and ecosystems prosper and are resilient in the face of change. Data revealed that the regional teams are an established forum for collaboration across line offices, evident through visible, cross-regional interactions across the network. Sociograms of NOAA's strategic goal activity show clear leaders communicating with an array of line offices. The resulting data also confirm and validate a number of perceived differences among regional geographies. In addition to presenting these study findings, the session will highlight a number of data applications (both planned and in action).

THE NEW OCEAN ORDER: WHAT'S LAW GOT TO DO WITH IT?

Susan E. Farady*

Marine Affairs Institute, Rhode Island Sea Grant Legal Program
Roger Williams University School of Law
10 Metacom Avenue
Bristol, RI 02809
sfarady@rwu.edu

Ocean uses and marine ecosystems are undergoing many changes. New uses such as offshore wind require new regulations, and present conflicts with existing uses. Existing uses such as fishing are changing dramatically. Impacts of climate change are creating unprecedented issues such as managing the effects of sea level rise on coastal communities, and adjusting fishery regulations as fishery stocks move from current habitats. The United States' system of ocean governance is under increasing pressure to evolve in response to these changing uses and conditions. Calls for ocean governance reform are nothing new, since the Stratton Commission's work in 1969 leading up to the 2010 Executive Order on Ocean Policy. Changes have indeed occurred at state, regional and federal levels, as changes to law and as policy initiatives. However, against today's rapidly changing ocean uses and conditions, the pace and nature of governance reform is inadequate to meet the needs of coastal residents, resource users and managers. This presentation will explore the historical context of ocean governance and the current state of reform. Then specific examples of legislative versus non-legislative reform will be analyzed for their effectiveness as innovative, responsive ocean governance. Finally, a case study will be presented analyzing management of the Stellwagen Bank National Marine Sanctuary under the National Marine Sanctuaries Act to illustrate both the limitations as well as the potential of existing law to meaningfully implement marine spatial planning and become the ocean governance we need.

SMART GROWTH AND RESILIENCE TO HAZARDS: STRATEGIES TO PROMOTE COASTAL COMMUNITY SUSTAINABILITY AND DURABILITY

Rebecca Feldman*, Gavin Smith, Julie Dennis, and Lee Einsweiler

National Oceanic and Atmospheric Administration
Office of Ocean and Coastal Resource Management
1305 East-West Hwy, N/ORM-3
Silver Spring, MD 20910
rebecca.feldman@noaa.gov
301-563-1138 (phone)
301-713-4367 (fax)

Smart growth approaches can help coastal and waterfront communities balance development with environmental protection, economics, and quality of life. At the same time, communities need to consider natural hazards, including potential climate change impacts. Community resilience is linked to smart growth and hazards management approaches, as well as siting, design, built and green infrastructure, social cohesion, and other characteristics. In 2011, NOAA, EPA, and Sea Grant partners sponsored a roundtable where smart growth, hazard mitigation, climate change adaptation, and coastal management experts came together to share ideas on how coastal communities can achieve smart growth goals while minimizing risks from natural hazards. During this panel, roundtable participants will discuss considerations for implementing hazard-resilient smart growth, particularly in Gulf Coast contexts, and highlight the value of dialogue across the smart growth, hazards, coastal management, and community planning communities. Rebecca Feldman will present an overview of the roundtable, key points discussed, and resulting products. Gavin Smith will describe design, planning, and hazards management principles, along with lessons learned from both sustainable development and recovery efforts, particularly in the Gulf, about facilitating resilience. Julie Dennis will discuss the Florida Post-Disaster Redevelopment Planning and Community Resiliency Initiatives, which create capacity needed for integrating hazard mitigation and resiliency into smart growth decisions. Lee Einsweiler will outline the Louisiana Land Use Tool Kit, Coastal Best Practices Manual, and selected issues at the nexus of smart growth and hazards resilience.

WADING IN – TACKLING SEA LEVEL RISE IN NORTH CAROLINA: RISK ASSESSMENT, COMMUNICATION, ADAPTATION STRATEGIES, AND POLICY-MAKING

Rebecca Feldman (Moderator)*, Michelle Covi, John Dorman, Donna Kain, Tancred Miller, Dylan Sandler, and Gavin Smith

National Oceanic and Atmospheric Administration
Office of Ocean and Coastal Resource Management
1305 East-West Hwy, N/ORM-3
Silver Spring, MD 20910
Rebecca.Feldman@noaa.gov
301-563-1138 (phone)
301-713-4367 (fax)

This panel will address sea level rise planning in North Carolina (NC) from several perspectives, including potential impacts, risk communication and management, political challenges, and adaptation planning. Michelle Covi and Donna Kain will describe risk perception in two coastal NC communities using a document-based methodology with residents and supplemented by interviews with leaders. Most residents (88%) learned new information, but substantial confusion exists. Sea level rise risk communicators will need to overcome challenges of scientific understanding and deal with attitudes including fear, skepticism, and fatalism. John Dorman will describe how the NC Sea Level Rise Impact Study has developed data to inform stakeholders about the potential consequences of sea level rise. The information was developed using a multi-scenario approach to accommodate disparate viewpoints across the state. Innovative aspects of the study framework and lessons learned will be highlighted. Tancred Miller will describe the NC Coastal Resources Commission's efforts to adopt a state policy on sea level rise. The Commission has worked openly with state scientists, local governments, resource agencies, environmental and private sector groups, and the public to draft a policy that sets the state on a course towards increased resiliency and planned adaptation to sea level rise. Gavin Smith and Dylan Sandler will describe their participation in the NC Sea Level Rise Impact Study, including the development of an adaptation capability assessment for state and federal agencies, an evaluation of flood risk management strategies, and lessons that may be learned from other coastal states and the international community.

INTEGRATING SOCIAL SCIENCE INTO OCEAN AND COASTAL DECISION-MAKING AND GOVERNANCE: THE INTERAGENCY WORKING GROUP ON OCEAN SOCIAL SCIENCE

Thomas E. Fish*, Marilyn Buchholtz ten Brink, and Chris Ellis

Cooperative Ecosystem Studies Units Network
U.S. Department of the Interior
1849 C Street NW, Room #2737
Washington, DC 20240

The application of social science has been recognized as a priority for effective ocean and coastal management, driving much discussion and fostering emerging efforts in several areas. Officially chartered in February 2010, the Interagency Working Group on Ocean Social Science (IWG-OSS) is tasked with assisting the Joint Subcommittee on Ocean Science and Technology and Subcommittee on Integrated Management of Ocean Resources in integrating social science into ocean, coastal, and Great Lakes governance structures, agency functions, policies, and decision-making. The working group comprises social scientists representing U.S. federal agencies with ocean-related responsibilities. The IWG-OSS provides input on how agencies can enhance current policy, management, and research activities through incorporation of social science, and thereby better inform ocean- and coastal-related decision-making. The working group's efforts are focused on three key areas: (1) coastal and marine spatial planning, (2) resiliency and adaptation to climate change and ocean acidification, and (3) informed decision-making and improved understanding of ocean, coastal, and Great Lakes governance. The IWG-OSS is currently working to address gaps in federal agency social science capabilities and capacity; coordinate across scientific and management communities to identify priority social science data needs; provide input on best practices for incorporating social science in planning and management actions; develop guidance for federal agencies and regional ocean partnerships on how to use social science to evaluate the effectiveness of their programs; and foster a robust community of practice for ocean, coastal, and Great Lakes social science.

MARYLAND'S ECOSYSTEM ENHANCEMENT PROGRAM – AN ECOSYSTEM BASED APPROACH TO MITIGATION

Kristen B. Fleming

Maryland Department of Natural Resources
Chesapeake and Coastal Service
Tawes State Office Building
580 Taylor Ave., E2
Annapolis, Maryland 21401
kfleming@dnr.state.md.us

The fundamental purpose of Maryland's Ecosystem Enhancement Program (ME2), is to provide a better model for mitigation in the State by targeting our limited resources (funding) towards mitigation that enhances Chesapeake and Coastal Bay Restoration. This is done through a simple, ecosystem based targeting approach that emphasizes both programmatic and geographic components. Currently, state mitigation dollars are spent on costly projects; are not targeted in advance yet planted at "where available" locations; and provide little true ecological benefit for what was lost. With ME2 - mitigation sites are planned, targeted and constructed in advance of the impacts. All mitigation done through ME2 is on State land and therefore does not have the added expense incurred through costly private land deals and time delays. ME2 targets sites by looking at gaps in the State's Green Infrastructure (GI) – continuous lands with high ecological value - and provides highly beneficial projects in these areas that yield water quality and habitat benefits far greater than those found in a typical mitigation project. An average 5 fold higher nutrient reduction rate can be obtained from agricultural Best Management Practices - BMP's (forest buffers, wetlands, and grass buffers) than urban BMP's. ME2 mitigation constructs agricultural BMP's in areas already targeted by the GI as having a high ecological value, thereby providing the best practice, in the best location, and helping to accelerate Bay restoration in the most fiscally responsible manner.

THE POTENTIAL OF MARINE CITIZENSHIP TO MOBILISE PUBLIC BEHAVIOUR CHANGE TO SUPPORT MARINE ECOSYSTEM SERVICES

Stephen Fletcher*, Rebecca Jefferson and Emma McKinley

Centre for Marine and Coastal Policy Research

Plymouth University

Portland Square

Drake Circus

Plymouth

PL4 8AA

United Kingdom

Email: steve.fletcher@plymouth.ac.uk

Individual human behaviour is a driver of marine environmental damage. This is linked to lifestyle choices, a lack of understanding of the coastal and marine environment, and personal value systems that fail to recognise the importance of making choices that support well-functioning ecosystems. An emergent area of research is how to prompt public behavioural change to reduce the pressure exerted upon marine ecosystems. This is the study of marine citizenship, which describes a relationship between an individual, the state, and the marine environment, in which the individual is encouraged to adopt behaviours that support improved marine ecosystem functions and services. Associated considerations include public understanding of the marine environment, the values held by the public towards marine ecosystems, and the enabling factors that support marine pro-environmental behaviour. This extended session will touch upon all of these factors, but will focus on marine citizenship as a route to deliver improved ecosystem functions and services. Marine citizenship as a policy channel has potential to deliver tangible benefits to marine and coastal ecosystem governance; therefore this workshop is a timely opportunity for discussion of its benefits and burdens. The aim of this extended session is *to debate the potential effectiveness of marine citizenship as a contribution to improved marine and coastal ecosystem functions and services*. This will be achieved through a structured workshop involving two presentations to communicate key ideas related to marine citizenship and public values towards the marine environment, and two one-hour structured discussions.

PORT PARTICIPATION IN A REGIONAL OCEAN PARTNERSHIP: LESSONS LEARNED FROM ONE LOCAL MUNICIPALITY'S EXPERIENCE WITH THE WEST COAST GOVERNORS' ALLIANCE ON OCEAN HEALTH

Angie Fredrickson
Port of Seattle
angief515@gmail.com

Regional approaches to ocean governance have been identified by the U.S. Commission on Ocean Policy, the Pew Oceans Commission, the Joint Ocean Commission Initiative, and the National Ocean Council as the recommended path forward to ensure holistic management of our oceans, coasts, and Great Lakes at the large marine ecosystem scale. Through its participation in the west coast regional ocean partnership, the West Coast Governors Alliance on Ocean Health (the WCGA), the Port of Long Beach, CA (the Port) works collaboratively to promote Green Ports initiatives within California, Oregon, and Washington. As a member of the WCGA's Sustainable Coastal Communities Action Coordination Team (the SCC ACT), the Port has engaged with a diverse team to develop a Sustainable Coastal Communities Work Plan (the Plan) aimed fostering vibrant coastal economies and thriving, scientifically managed natural systems, with a wide range of actions targeting sustainable fisheries, aquaculture, recreation and tourism, clean marinas, and green ports. To foster environmental stewardship at all west coast ports, the Plan identifies common obstacles and opportunities, and identifies actions to be implemented at the regional scale. To ensure successful implementation of the Green Ports elements of the Plan in the context of today's fiscally constrained climate, the Port of Long Beach is working collaboratively with other WCGA participants to leverage existing resources and forums. As an early example of a Port's participation in a regional ocean partnership, the Port of Long Beach's experience with the WCGA provides valuable lessons learned for local municipalities seeking to engage in the broader ocean policy dialogue.

A COMMUNITY-BASED FRAMEWORK FOR IDENTIFYING, ASSESSING, AND EVALUATING ECOSYSTEM SERVICES PROVIDED BY MARINE RESERVES IN OREGON

Peter M. Freeman*, Randall S. Rosenberger, Gil Sylvia, Selina S. Heppell, Michael J. Harte

College of Oceanic and Atmospheric Sciences
Oregon State University
104 COAS Administration Building
Corvallis, OR 97331

The implementation of marine reserves (fully non-extractive marine protected areas) in Oregon as a tool of ecosystem-based management requires a framework for translating biophysical change into socioeconomic costs and benefits. Such a framework should capture the dynamic complexity of social, cultural, economic, and ecological processes, as well as uncertainty and tradeoffs associated with marine spatial planning and monitoring. We have developed a framework to accomplish this task through integrating biophysical data and community-based social and economic evaluation methods. Specifically, our framework structurally links indicators used in the biological monitoring of marine reserves in Oregon with indicators of social welfare associated with the provision of ecosystem services to local communities. The resulting suite of composite indicators can be used in a stated-preference survey instrument to derive relative values for the provision of various ecosystem services flowing from marine reserves. These values can be used to inform, prioritize, and correlate socioeconomic and biological monitoring efforts at those sites. In order to address the challenges of valuing indicators of ecosystem services through a survey instrument, indicators must correspond to ecosystem services that provide utility to respondents, not present excessive cognitive demands on survey respondents, and explicitly reflect uncertainty implicit in the forecasting of short- and long-term impacts on marine resources. We apply and analyze our framework in a case study of two pilot marine reserves in Port Orford and Newport, Oregon. Our framework, however, can be applied generally to any marine spatial management context at the local, state, national, and international scale.

SEDIMENT CHARACTERIZATION OF THE NEW JERSEY SHORELINE

Michael Flynn

The Richard Stockton College Coastal Research Center
30 Wilson Avenue
Port Republic, NJ 08241
Michael.Flynn@stockton.edu

In coordination with the New Jersey Beach Profile Network to monitor shoreline change, an extensive sediment sampling and analysis project was developed to create an average grain size distribution map for the oceanfront coast along the State of New Jersey using GIS software. The composition of the beach sand was determined through sieve analysis for grain size and microscopic examination for mineralogy. A total of 106 samples from the Delaware Bay to the Raritan Bay, spaced approximately one mile apart, were collected at the high tide line at each site. This was only the second time this study has been conducted for the entire NJ ocean front coast and the results were compared to the 1954 report “Petrography and Genesis of the New Jersey Beach Sands,” by Robert L. McMaster. The study analyzed the change of New Jersey’s beach sands as to texture and mineral composition, and interpreted the origin and movement of present sands. Records of beach fills from the U.S. Army Corps of Engineers, State of NJ, and its municipalities were evaluated to determine sources of discrepancy in comparison to the 1954 study. Comparison of the results from the McMaster report to the findings produced in this study showed how anthropogenic endeavors, such as beach replenishment projects, significantly modify the average grain size of beach sand that would naturally be present in a state of equilibrium at these locations. Using over 20 years of shoreline survey data collected by the Stockton College Coastal Research Center in the same locations as the sediment samples, this study included an investigation of the correlation between average grain size and shoreline trends. As a result, this study can significantly benefit coastal zone managers and engineers when designing future nourishment projects whether at a local or regional scale.

CONNECTING THE DOTS IN THE COASTAL OCEAN WITH COMPREHENSIVE ECOSYSTEM ASSESSMENTS

Melissa M. Foley*, Erin E. Prahler, Matthew H. Armsby, Margaret R. Caldwell,
Larry B. Crowder, Ashley L. Erickson, John N. (Jack) Kittinger

Center for Ocean Solutions, Stanford University
99 Pacific St, Suite 155a
Monterey, CA 93940
mmfoley@stanford.edu

As the number of users vying for space continues to grow in the coastal ocean, so too does the need for a more comprehensive understanding of how ecosystems are structured, how they function, and how those fundamentals are linked to the provision of ecosystem goods and services relied upon by coastal communities. In addition, it is important to incorporate the temporal and spatial characteristics of these linkages into comprehensive ecosystem-based plans rather than treating them as fixed entities. Comprehensive ecosystem assessments (CEAs) provide a framework to incorporate ecosystem-based principles into planning efforts and to make the connections within and between ecosystems more transparent. Equipped with this knowledge, management decisions can be made with a better understanding of the interdependence between healthy ecosystems and human communities. Here we explore how CEAs can be structured to capture the fundamental ecosystem attributes and related human dimensions of coastal communities that determine the structure, functioning, and resilience of these linked systems. We will review CEA frameworks used in spatial planning processes around the world, highlight the strengths from these existing approaches, and provide recommendations for bolstering and standardizing these assessments for implementation. Integrating ecological and social data has the potential to provide a more realistic understanding of the linkages between healthy ecosystems and communities, including which ecosystem services are essential for community wellbeing. CEAs provide a framework for drawing this information together in a way that can help to inform planning efforts and policy and management decisions.

IDENTIFYING THE BOUNDARIES OF CORAL REEF CONSERVATION: A CONTINGENT VALUATION STUDY TO INVESTIGATE THE EFFECTS OF PERCEPTION OF SCALE AND MAGNITUDE OF REEF PROBLEMS ON WILLINGNESS-TO-PAY FOR FIJIAN REEF PRESERVATION PROGRAMS

Carolyn Fonseca*and Douglas S. Noonan

Peanut Collaborative Research Support Program
Department of Agriculture Economics
University of Georgia
1109 Experiment Street
Griffin, GA 30223-1797
email: cf@uga.edu

Often the perception is that those who live close to a coral reef place a higher value on it, and are likely to donate more than a person living farther away. Thus, conservation programs often focus efforts around local communities with the assumed higher potential for revenue. These values might also include non-use values, however, present for those living far away as well. Similarly, those who know more about reef problems-the magnitude and scale of coral reef issues-are assumed to 'care' and donate more. Where should the boundary of care be drawn and how does a policy determine who to include as a stakeholder? Little research exists to show how individuals spatially bound problems, and how this affects their level of "care" (donation, participation). The goal of this paper is to learn how perceptions of problem boundaries of distant households influence their WTP. The potential value of Fijian reefs by non-donors has not been assessed empirically through non-market valuation, especially for distant non-users. Household survey data from the Atlanta area show residents' average WTP at \$0.18 for a conservation project in Fiji. Even distant non-users with little knowledge of coral reefs were willing to support the program, although divers' values were not larger. Varying perceptions and knowledge affected WTP. Understanding the public's view of coral reef problems, specifically how they define the magnitude and scale of the problem, could help determine links between views and support.

THE VALUE OF EELGRASS *Zostera marina* IN PUGET SOUND, WA. STRESSOR ABATEMENT THROUGH IMPROVED REGULATIONS AND POLICIES COMPARED WITH TARGETS AND SUCCESSES FROM OTHER ESTUARINE SYSTEMS.

Heather D. Gibbs

Washington Sea Grant Hershman Policy Fellow
WA Department of Natural Resources
1111 Washington St SE
Olympia, WA 98504-7027
heather.gibbs@dnr.wa.gov

Submerged Aquatic Vegetation (SAV), in particular seagrasses, provide numerous benefits to coastal communities including sediment stabilization, carbon sequestering, a natural sink for nutrients, a habitat for fish while migrating or spawning, and feeding habitats for waterfowl. The Puget Sound Partnership, a state agency appointed by Governor Gregoire in 2007, has set an eelgrass target increase of 20% by 2020. Assisting with the new target, the Washington Department of Natural Resources researched five case study sites with known targets for seagrass increases. The five case studies were; Chesapeake Bay, Charlotte Harbor Bay, Florida Bay, Tampa Bay, and Indian River Lagoon. At each site a description of the location including population, physical characteristics, and adjacent land and aquatic uses were identified. Once the area was described, seagrass stressors at the different sites were noted along with regulation or policy changes which lead to increases in seagrass. Given the findings in the different case studies, possible stressors for local eelgrass (*Zostera marina*) in Puget Sound, WA were identified. Recommendations to corresponding agencies for changes in regulations or policies affecting or impeding stressor abatement in Puget Sound were made. Lastly an attempt at valuation of *Zostera* was completed identifying the Ecosystem Goods and Services it provides as a “habitat of special concern” as designated by the Washington Department of Fish and Wildlife (WAC 220-110-250).

A REVIEW OF CONTINGENT VALUATION METHODS FOR WETLAND GOODS AND SERVICES

Leigh C. Habegger

The Coastal Institute
University of Rhode Island
1 Greenhouse Road
Kingston, Rhode Island 02881
Email: leighh@my.uri.edu

Wetlands provide numerous important goods and services to humans such as water purification and storm protection as well as food, water, and shelter for a variety of animals including fish, shellfish, birds, and mammals. They also serve as breeding and nursery grounds for many species. Despite wetlands' importance, their lack of market value means that they are often discounted when compared to the relative gains resulting from conversion. Contingent valuation captures wetlands' values based on respondents' willingness to pay for a particular wetland service or amenity. Using five case studies, contingent valuation methods were compared in order to assess the variability within this methodology. Values adjusted for the year 2000 ranged from \$71.49 to \$423.72 (Kazmierczak 2001). By examining the degree to which willingness to pay consistently captures the value of ecosystem services, I will provide a preliminary assessment of the extent to which the nearly 6 fold difference in dollar values may be attributed to measuring different features of the ecosystems. Without a consistent way of valuing wetlands, policy may not capture the true value of ecosystem goods and services, resulting in unwise coastal development and incomplete regulations.

SEA-LEVEL RISE ADAPTATION PLANNING FOR THE CITY OF LOS ANGELES, CA

Juliette Finzi Hart*, Phyllis Grifman, James Fawcett

University of Southern California Sea Grant
3616 Trousdale Pkwy, AHF 253
Los Angeles, CA 90089-0373
jahart@usc.edu
213-740-1937

Coastal communities in California are anticipating a climate change scenario in which temperatures will warm significantly during the 21st century, and expect an increase in the frequency, magnitude and duration of heat waves and sea-level rise (SLR) extremes. As such, coastal Californians have recognized the need to plan for the impacts of climate change, specifically SLR. City of Los Angeles (L.A.) Mayor Antonio Villaraigosa has made climate change adaptation one of his top priorities in this city of four million, home to the nation's busiest seaport. USC Sea Grant worked with the Mayor's office and city-wide agencies, along with scientific experts, to begin planning for the impacts of SLR along the City's coast. We developed a city-led, science-based, and stakeholder- and public-supported process to both review and analyze current city policies and conduct a vulnerability and risk assessment on the impacts of SLR. This work will culminate in a SLR adaptation plan for the City of L.A.. In addition, the process developed will be utilized for other climate change planning efforts within the City and across Los Angeles County; thus building capacity for the region as a whole. We will provide an overview of our planning process, describe lessons learned, and discuss the next steps towards finalizing the adaptation plan.

“SHOW ME THE MONEY”

ECONOMICS: NATIONAL OCEAN WATCH DATA FOR OCEAN MANAGEMENT

Zac Hart*, Jeff Adkins, Danielle Bamford

I.M. Systems Group, Inc.
NOAA Coastal Services Center
Human Dimensions Program
2234 S. Hobson Ave.
Charleston, SC 29405
email: Zac.Hart@noaa.gov

The proper use of economic data is a vital part of making decisions about the management of our nation’s oceans and coasts. This presentation showcases a Web-based tool that makes it easy for users to explore data describing six economic sectors that depend on the oceans and Great Lakes. This collection of data, named Economics: National Ocean Watch or ENOW, provide indicators of the county, state, and national significance of the ocean and Great Lakes economy. Four indicators are included: Business establishments, jobs, wages, and Gross Domestic Product. ENOW is produced by the NOAA Coastal Services Center for 448 coastal counties, 30 coastal states, and the nation using data from, and in partnership with, the U.S. Bureau of Labor Statistics, Census Bureau, and Bureau of Economic Analysis. ENOW features the following six sectors: Living resources, marine construction, marine transportation, offshore mineral resources, ship and boat building, and tourism and recreation.

THE SOCIAL COAST—IT'S *NOT* ANOTHER SOCIAL NETWORKING SITE

Zac Hart

I.M. Systems Group, Inc.
NOAA Coastal Services Center
Human Dimensions Program
2234 S. Hobson Ave.
Charleston, SC 29405
Zac.Hart@noaa.gov

Although coastal managers are increasingly recognizing the human dimensions of complex coastal issues, using social and economic data to help make decisions continues to be a challenge. A specific and well documented need is for easy-to-use resources on integrating spatially referenced social and economic data with other types of geospatial data. The Social Coast website, a resource within the NOAA Coastal Services Center's Digital Coast website, is focused on helping coastal managers integrate social and economic data with other geospatial data to make better decisions. Featuring the coastal components of a broad range of social and economic data sets from agencies such as the Bureau of Economic Analysis, the Census Bureau, the Bureau of Labor Statistics, and others, the website provides data, tools, training, and stories on one of the most important aspects of coastal management—the people. In this session, participants will experience a guided tour of the new resource and will hear about real-world successes on using social and economic data in coastal management.

PREDICTIVE MODELING OF GROUND FISH ABUNDANCE IN THE NEW YORK BIGHT: A TOOL FOR MARINE SPATIAL PLANNING

Zach Hecht-Leavitt

Division of Coastal Resources
New York Department of State
1 Commerce Plaza
Albany, NY 12231

Coastal and marine spatial planning (CMSP) is a framework for addressing competing uses in crowded offshore environments, such as siting offshore renewable energy and protection of critical offshore habitats. While detailed spatial information on the abundance and distribution of maritime species can help identify critical habitat areas and inform the planning process, such information is often unavailable. However, limited point counts of species abundance or presence/absence can be used in conjunction with maps of environmental covariates to produce high-resolution, continuous species distribution maps along with estimates of the error associated with those predictions. This poster describes such a method with a case study in the New York Bight. The seasonal abundance of six species of groundfish from the NOAA Northeast Fisheries Science Center's bottom trawl survey program was modeled as a function of environmental variables including depth, slope, distance from shore/shelf, sea surface temperature, stratification, turbidity, chlorophyll a, zooplankton, and sediment grain size. Generalized linear models (GLMs) were used to determine coefficients for the environmental predictors, and simple kriging (SK) of residuals was used to account for spatial autocorrelation in the data. Model parameters were entered in a GIS to produce the final maps, and model performance and error were assessed using two-fold cross-validation. Special attention is given to challenges in communicating the results, limitations, and utility of this method to coastal resource managers and stakeholders.

MAPPING THE FUTURE OF COASTAL AND OCEAN OBSERVING IN THE SOUTHEAST

Debra Hernandez*, Vembu Subramanian

PO Box 13856
Charleston, SC 29422
debra@secoora.org

Southeast Coastal Ocean Observing Regional Association (SECOORA) is one of 11 regional associations partnered with the U.S. Integrated Ocean Observing System (IOOS®). The SECOORA footprint encompasses coastal estuarine and ocean waters from North Carolina to the west coast of Florida. This region is vulnerable to storm hazards, potential impacts from oil drilling, and climate variability. SECOORA has recently developed a Build Out Plan for a regional coastal ocean observing system that integrates observations, modeling, data management, education, and scientific assets to improve our understanding of hazards, improve decision making, reduce environmental and societal risks, and support the economy of the region. This plan prioritizes user needs, leverages partnerships, and will improve data collection and accessibility. Combining the 11 Regional Association plans will present a comprehensive national picture of the regional needs for observing assets and will support a critical National Ocean Policy goal to “Strengthen and integrate Federal and non-Federal ocean observing systems, sensors, data collection platforms, data management, and mapping capabilities into a national system and integrate that system into international observation efforts.” We will present the SECOORA Build Out Plan and seek input and feedback from stakeholders at the conference to assure stakeholder priorities are supported.

ASSESSING THE VALUE OF RECREATION TRIPS IN THE COASTAL ZONE: AN APPLICATION OF BENEFIT TRANSFER

Paul R. Hindsley

Eckerd College
4200 54th Avenue South
St. Petersburg, Florida 33711
Phone: 727-864-7722
Email: hindspr@eckerd.edu

The provision of ecosystem goods and services represent a key constituent component of well-being for coastal residents. Economics has developed a variety of methodologies for measuring how individuals value the ebb and flow of ecosystem services. These economic values provide managers and policy makers tools for assessing relevant trade-offs associated with resource allocation decisions. While many methods of economic valuation rely on primary data collection, in some situations the collection of primary economic data proves costly and/or time consuming. Benefit transfer represents a common alternative, where the economic valuation of goods and services can be estimated using alternative studies in the literature. This paper investigates the provision of recreational services in the coastal zone through the estimation of a value function, which is constructed using meta-analysis. This application utilizes values of recreation trips from the economic literature. It also discusses key methodological topics relevant to the application of benefit transfer for coastal decision making.

THE CLIMATE ADAPTATION KNOWLEDGE EXCHANGE (CAKE): YOUR ONLINE ADAPTATION DESTINATION

Jennie Hoffman, Jessica Hitt, Rachel Gregg, and Lara Hansen

EcoAdapt
4755 NE Lamms Lane
Poulsbo WA 98375

The Climate Adaptation Knowledge Exchange (CAKE) is a joint effort by EcoAdapt and Island Press to create an innovative community of practice on climate change adaptation. CAKE, an interactive online destination, is about supporting the changes that conservation and resource management must make to keep up with the changing planet. CAKE is intended to support individuals interested in developing the discipline of adaptation to climate change by facilitating the identification of important information and its accessibility; building a community via an interactive online platform; connecting practitioners to share knowledge and strategies; and networking with other relevant materials around the web. This poster will showcase the different components of CAKE, including the availability of a georeferenced database of adaptation case studies, a directory of adaptation-interested people, a virtual library of resources that can support adaptation efforts, advice for conservation and information exchange, and links to tools and data that are available to support and build the adaptation community. We invite you to learn from and join CAKE.

TOOLS THAT SUPPORT CLIMATE-SMART COASTAL AND MARINE PLANNING, CONSERVATION, AND RESTORATION

Jennifer Hoffman* and John Rozum

EcoAdapt
4755 NE Lamms Lane
Poulsbo WA

Climate change has multiple implications for planning, conservation, and restoration work in coastal and marine systems. This includes physical effects such as sea level rise and higher storm surges, chemical effects such as changes in pH and salinity of marine waters, biological effects such as altered species distribution, and socioeconomic effects such as changes in resource availability or human resource use. There are increasing numbers of climate-related tools, both computer programs and structured processes, that can help planners and managers integrate these changes into their work. These tools can serve a number of purposes, including

- Data access, analysis and visualization
- Stakeholder engagement and communication
- Assessing interactions between climate change and other stressors such as polluted runoff
- Exploring scenarios for management or restoration options

This panel discussion will introduce the types of tools available for supporting climate-smart coastal and marine efforts, considerations in selecting and using tools appropriately, and case studies of how tools have been used in a handful of coastal and marine restoration, planning, and conservation efforts. We will explore questions practitioners and managers should consider as they decide which, if any, tools to use, and illustrate approaches to integrating multiple tools throughout a project's lifespan.

BARRIERS TO MITIGATING FOR SEAGRASS LOSS IN FLORIDA

Althea S. Hotaling*, Robert A. Swett, Thomas T. Ankersen, Robert B. Lingle, and Charles W. Listowski

University of Florida
School of Natural Resources and Environment
Boating and Waterway Management Program
Bldg. 107 Mowry Rd
Gainesville, FL, 32611
theah@ufl.edu

As Florida's population grows, so does the number, size, and power of boats used on the state's coastal waterways. The growth in boating has put intense pressure on ecologically important nearshore environments like seagrass beds. Two of the main impacts on seagrass beds are an increase in the incidence of prop scars and greater pressure for maintenance dredging of navigation channels. These activities damage seagrass beds, thereby compromising the numerous ecosystem services that they provide to coastal communities. However, the policies governing seagrass protection and mitigation can be so cumbersome that they prevent dredging that is needed by local boating communities. A typical component of mitigation is restoration and, in Florida, the amount of restoration needed is determined by the Unified Mitigation Assessment Method (UMAM). However, UMAM was developed for wetland mitigation and its application to seagrass is problematic, given the ecological differences between seagrass and wetlands. The Unified Mitigation Assessment Method also relies heavily on the use of mitigation banks, which typically are privately owned commercial ventures. In Florida, most seagrass is found on sovereign submerged lands held in trust by the state (public land), making mitigation banks difficult to establish. Since some anthropogenic impacts to seagrass are unavoidable, it is critical that more effective restoration policies be implemented. We suggest that there should be a regional plan that identifies areas in need of restoration and a mitigation banking approach be considered as a means to further seagrass restoration.

AN ASSESSMENT OF THE EFFECTS OF PHARMACEUTICALS AND PERSONAL CARE PRODUCTS ON MARINE ECOSYSTEM HEALTH

Zakiya Hoyett* and Michael Abazinge

School of the Environment
Florida Agricultural and Mechanical University
1515 Martin Luther King, Jr. Blvd.
FSH – Science Research Center, Lab 318
Tallahassee, FL 32304
Zakiya1.Hoyett@famu.edu

The occurrence of pharmaceuticals and personal care products (PPCPs) in sewage treatment plant effluents, surface waters, seawaters, ground water, and some drinking waters has led to an increasing concern about the impact of these chemicals on the aquatic environment. The overall purpose of this research was to assess the effects of select PPCPs on marine ecosystem health in two different bays on the gulf coast of Florida using various ex-situ detection methods. The statuses of these contaminants were observed at a presumably pristine site, Apalachicola Bay, and a significantly degraded site, Tampa Bay. The compounds selected for this project include a variety of antibiotics, analgesics, lipid regulators, and antidepressants which were chosen based on number of prescriptions, persistence in the environment, as well as possibility of environmental impact, and availability of analytical standards. The objectives of this project were to execute a reconnaissance survey to examine concentrations of selected PPCPs in Apalachicola Bay and Tampa Bay, compare the concentrations of these compounds in Apalachicola Bay with those found in Tampa Bay, perform acute toxicity tests using the bioluminescent bacterium, *Vibrio fischeri*, to evaluate the potential toxicity of PPCPs established as highly concentrated by the reconnaissance, and use collected data and existing data in statistical analysis to determine the impact of PPCPs on these systems.

ANALYZING POTENTIAL OIL SPILL DAMAGES TO WETLANDS IN GALVESTON BAY: A GIS-CENTRIC APPROACH

Hillary B. Huffer

Center for Natural Hazards Research
East Carolina University
A-113 Brewster Building
East Carolina University
Greenville, NC 27858-4353
Email: Hufferh08@students.ecu.edu

In the wake of Deepwater Horizon, increasing interest has been placed on assessing the risks associated with oil rig placement. The purpose of this analysis is to estimate the value of potential damages to wetlands throughout Galveston Bay, Texas using oil spill trajectory modeling. The methodology proceeds in several steps. First, prior work by Costanza et al (1989) provides a lower bound estimate of the value of wetlands per acre. Second, random points within the bay are selected as oil spill launch sites and 50-barrel oil spills are simulated for 24-hours by utilizing the General NOAA Operating Modeling Environment. Third, the resulting acreage of wetlands impacted by the simulated oil spills is calculated in ArcMap 9.3 using the Texas General Land Office's Environmental Sensitivity Index data. Finally, the total dollar value of potential damages for each launch point is estimated and extrapolated to the rest of the bay using spatial interpolation. The results indicate the areas in the bay that are likely to cause high and low amounts of wetland damage if an oil spill originates from that location.

A COMPARISON OF RECREATIONAL AND COMMERCIAL FISHERMAN ON PERCEPTIONS OF MANAGEMENT MEASURES ON STRIPED BASS (*MORONE SAXATILIS*) IN THE ALBEMARLE SOUND/ROANOKE RIVER

C.S. Hughes

East Carolina University

Greenville, NC 27858

Hughesc97@students.ecu.edu

Researchers, fisheries managers, recreational and commercial fishermen alike, all consider striped bass (*Morone saxatilis*) to be a prodigious topic of interest. The fishery is a significant factor in the history, culture, recreation and economic development of North Carolina. Intensive fishing pressure caused a drastic decline in the catch of striped bass (*Morone saxatilis*) during the late 1970's through the mid 1990's. The Albemarle Sound/Roanoke River striped bass fishery was declared fully recovered in 1997 and is the third largest population of striped bass along the Atlantic Coast. The rebound of this fishery is considered to be a huge success by fisheries management standards. While research has been conducted to assist in successfully managing this species, fishermen's opinions and preferences for management had not previously been evaluated. The objectives of the project were to assess commercial and recreational fisherman's current and potential management preferences of Albemarle Sound/Roanoke River striped bass fishery. Comparisons between commercial and recreational fishermen on regulations, strategic habitat areas, and environmental impacts were also evaluated. This research has provided useful information in the development of future management plans and regulations that consider the needs of all user groups.

PLANNING FOR EROSION MITIGATION IN MATUNUCK: THE RELEVANCE OF COASTAL PROCESSES AND CLIMATE CHANGE

Shannon D. Hulst

Department of Marine Affairs
Coastal Institute
1 Greenhouse Road
University of Rhode Island
Kingston, RI 02881-1966

Property owners and town officials in South Kingstown, Rhode Island are seeking means to protect private property and a local road from coastal erosion. Matunuck Beach Road is the only means of egress for nearly five-hundred homes in the village of Matunuck, and there is a public water main running underneath. There are millions of dollars worth of private structures that are also in danger from erosion. The political factors at play in this case are the desire to preserve private investments, the interest in keeping thriving businesses open, the protection of infrastructure, and the maintenance of community character. In addition to these anthropocentric factors, there are the coastal management challenges of maintaining a healthy and dynamic shoreline, preventing damage to neighboring coastal properties, and appropriately preparing for a future with a different climate and sea level. This study uses mental models analysis to determine the extent to which research subjects understand the coastal processes and aspects of climate change relevant to the Matunuck coastline, and to determine the extent to which this understanding has informed what subjects identify as the most viable solution. In other words, subjects' understanding of the science is measured and then compared with their chosen erosion solution. Other factors, specifically those political factors mentioned above, are considered as well. The research subjects in this study are key players in the planning process, specifically private property and business owners in Matunuck, South Kingstown Town Council members, South Kingstown government officials, and Coastal Resources Management Council members.

THE ROLES AND INVOLVEMENT OF LOCAL GOVERNMENT HUMAN RESOURCE PROFESSIONALS IN COASTAL CITIES EMERGENCY PLANNING

Tanveer Islam* and Stacey Mann

Department of Emergency Management
Jacksonville State University
100 Gamecock Drive
Anniston, Alabama 36205
tislam@jsu.edu

Across the U.S., coastal cities are threatened by many different man-made and natural hazards. From oil spill to hurricanes, tsunamis or coastal flooding, these cities should be prepared for emergency situations and should have well-organized emergency plans for their citizens. As a department that has contact with local government employees, human resource (HR) professionals understand the concepts that are important in times of crisis, including benefits management, training and development, and talent management. From mitigation to recovery, employees are vital to planning and responding to an emergency, and in a time when local government is focused on serving its citizens, local government human resource professionals serve those protecting those citizens – local government employees. The objective of this paper is to assess the roles and involvement of local government human resource professionals in emergency planning in coastal cities nationwide. Using responses collected from HR professionals in coastal cities with populations of 50,000 – 249,999, this paper investigates common HR issues included in emergency plans. Based on the analysis of their responses, gaps are identified and recommendations are made of ways in which human resources can contribute more effectively towards emergency planning for coastal cities.

COASTAL CLIMATE ADAPTATION: BUILDING THE PUERTO RICO CLIMATE CHANGE COUNCIL

Kasey R. Jacobs* and Ernesto L. Diaz

Puerto Rico Coastal Zone Management Program
Department of Natural and Environmental Resources
P.O. Box 366147
San Juan, PR 00936
Ph: (787) 999-2200 x2720
kjacobs@drna.gobierno.pr

The Puerto Rico Department of Natural and Environmental Resources Coastal Zone Management Division has partnered with over 120 scientists, planners, practitioners, and communication experts to develop a comprehensive climate change vulnerability assessment for Puerto Rico. Employing multiple collaboration and facilitation tools, scientific knowledge management, spatial analysis, and communication methods, a NOAA Coastal Management Fellow has been working with the newly created Puerto Rico Climate Change Council (PRCCC) and multiple stakeholders to accurately assess vulnerability to life and property. Additionally, this two-year project identified and assessed feasible adaptation strategies for government, the private sector, non-profit organizations, and civil society. Climate change will impact the social, economic, and ecological fabric of life in Puerto Rico, affecting key sectors such as economic development, tourism, services, natural resources, food security, and placing critical infrastructure at risk. The size, history, and relative isolation of the islands of Puerto Rico will make them feel the effects of climate change differently than other U.S. coastal zones. Climate changes will also significantly impact the islands' ecology and biodiversity. Before the Puerto Rico Coastal Adaptation Project this picture was incomplete due to lack of a coordinated effort to compile all best available scientific and local knowledge. The presentation will efficiently and engagingly discuss the process and multiple techniques used to create the PRCCC and the two main outputs: (1) the Puerto Rico Climate Change Vulnerability Assessment and (2) Climate Change Adaptation Options for Puerto Rico. Next, the main results of each will be discussed, and finally the lessons learned.

INCREASING RESILIENCY TO COASTAL HAZARDS: CLIMATE ADAPTATION AND COASTAL RESILIENCY PLANNING AT THE PORT OF LONG BEACH

Thomas Jelenic

Port of Long Beach
fredrickson@polb.com

Preparing for projected changes in climate, and a corresponding increase in coastal hazards, is an area of growing importance to the Port of Long Beach, CA (the Port). The Port acknowledges the scientific consensus which points to significant changes in climate in Southern California this century, including increases in temperature, decreases in precipitation, and increases in sea level rise. These climatic changes are expected to result in serious impacts to port operations and infrastructure, including increased risk of coastal flooding, erosion, and inundation, increased need for fortifications due to sea level rise, increased damage to wastewater systems and sewage distribution and treatment systems due to increased flooding, and higher demands for energy production. Accordingly, the Port has initiated its climate change preparedness efforts through the development of a Climate Adaptation and Coastal Resiliency Strategic Plan (CRS). The CRS Plan enables the Port to prepare for climate change and other coastal hazards by increasing the resilience of Port infrastructure and operations to anticipated impacts. The CRS Plan provides a process for incorporating planning for climate change into Port policy-making, planning, environmental documents, infrastructure design, construction practices, and Port community outreach and education efforts. To inform the development of the CRS Plan, the Port is conducting a Climate Impacts Study, which uses the best available science to assess the vulnerability of Port operations and infrastructure. To guide this effort, the Port is using the planning process identified by ICLEI – Local Governments for Sustainability, an internationally recognized leader in climate adaptation planning.

PRESERVING ECOSYSTEM SERVICES TO IMPROVE HUMAN WELL-BEING AT AN INDUSTRIAL PORT COMPLEX: MOVING BEYOND TRADITIONAL APPROACHES MITIGATION AT THE PORT OF LONG BEACH

Thomas Jelenic

Port of Long Beach
Jelenic@polb.com

Maintaining ecosystem services, especially those services related to air quality and water quality within coastal systems, is of primary importance to the Port of Long Beach, CA (the Port). As the steward of 7,600 acres of land and water, including tidelands, which are public lands held in trust for the citizens of California, the Port is charged with developing its historic harbor area in a manner consistent with the guidelines set forth in the California Coastal Act. Recognizing that the development of the harbor has direct impacts on the physical environment, and that this development directly contributes to an increase in economic activity, which is identified as key indirect driver of ecosystem change in the Millennium Ecosystem Assessment, and further recognizing that the impact of these indirect drivers is further compounded by direct drivers like nutrient loading and climate change, the Port has moved beyond traditional approaches to mitigation to develop new ways of addressing these impacts. Launched in 2009, the Port's Mitigation Grants Program seeks to mitigate the cumulative criteria air pollutant impacts, and greenhouse gas emissions impacts, associated with new development within the port complex. This award winning program is part of a comprehensive strategy to offset the impacts of port-related operations in the community, and provides grants for schools and related sites, healthcare and senior facilities, and greenhouse gas emissions reduction projects. The Mitigation Grants Program is the latest example of how the Port is moving beyond traditional approaches to mitigation to preserve ecosystem services while addressing the unique needs of its community.

VALUING COASTAL ECOSYSTEM SERVICES IN FLORIDA

Grace Johns*, Donna Lee, Vernon (Bob) Leeworthy, and Dave Loomis

Hazen and Sawyer
4000 Hollywood Boulevard, Suite 750N
Hollywood, Florida 33021
gjohns@hazenandsawyer.com

This presentation will describe why and how ecosystem services are valued with applications to the Marine and Estuarine Goal Setting for South Florida (MARES) program and the 2007 valuation of the Indian River Lagoon in eastern Florida. The presentation will focus on the ecosystem services and human dimensions indicators developed during the MARES program; how they are valued; and how these values will benefit policy and management decisions. The estimated 2007 economic values of the Indian River Lagoon will be presented along with the methods and data used. These 2007 values include the impact of the Lagoon on resident income, recreational use value, passive-use value, property values, commercial fishing values, and education and research & development values. The MARES project is a NOAA-funded collaborative effort among academic, government, and private organizations; biological and social scientists and resource managers to characterize South Florida coastal marine ecosystems. The human dimensions component links human values and responses associated with ecosystem services and management actions. Ecosystem services are comprised of environmental “attributes that people care about” and have direct value to humans that can be measured in dollars or another meaningful measure. Examples of ecosystem services in south Florida include: opportunity for offshore marine recreational; protection of property from storm damages; and opportunity to harvest and consume commercial fishery species. Economic valuation tools provide monetary measures of ecosystem services that reflect human willingness-to-pay to maintain or improve these services. Trends in ecosystem service values can be used to identify ecosystem components in need of attention.

BUILDING A GREAT LAKES SPATIAL DECISION SUPPORT TOOLBOX TO ADDRESS COMPREHENSIVE PLAN IMPLEMENTATION AND COASTAL HAZARDS

Kathy T. Johnson

NOAA Coastal Management Fellow
Wisconsin Coastal Management Program
101 E. Wilson St., 9th Floor
Madison, WI 53703
KathyT.Johnson@wisconsin.gov

In February 2010, Wisconsin began the process of developing a coastal web atlas to organize, present and share spatial data related to its shoreline and surrounding communities. The initial focus of the atlas is to provide access to maps and decision support tools needed to promote sustainable coastal development and resilience to coastal hazards. As part of the Wisconsin Coastal Atlas, this project builds a Great Lakes spatial decision support toolbox to assist coastal communities with implementing comprehensive plans and in preparing for and reducing damage from coastal erosion and flooding. This presentation summarizes the process used to build the decision support toolbox. The first step is development of a framework to evaluate spatial decision support tools. Applying this framework to existing tools helps select the most beneficial ones for inclusion in the atlas. The second step is development of new spatial decision support tools that facilitate implementation of comprehensive plans and adoption of policies that promote resiliency to coastal hazards. The third and final step involves training and tutorials that introduce coastal resource managers and others to the spatial decision support tool box. In conclusion, spatial decision support tools aid coastal communities in the implementation of comprehensive plans. These tools also help local communities prepare for and reduce damage from coastal hazards. As part of the Wisconsin Coastal Atlas, a Great Lakes decision support toolbox will assist planners and managers in preserving and protecting their coastal resources.

REDUCING COASTAL ECOSYSTEM RISKS FROM HULL-BORNE INVASIVE SPECIES

Leigh T. Johnson,* Carolyn S. Culver, Henry M. Page and Jenifer E. Dugan

University of California Cooperative Extension
9335 Hazard Way, Suite 201
San Diego, CA 92123
ltjohnson@ucdavis.edu

Boats carry aquatic invasive species (AIS) that disrupt coastal ecosystems and that foul and damage hulls and coastal structures. Copper-based, antifouling hull-paints face restrictions in Washington and California, due to water quality impacts. Research-based information is needed for sound decisions and sustainable policies to protect water quality while reducing ecosystem impacts from hull-fouling AIS. To inform these discussions, we studied effects of hull coating types and hull cleaning practices on fouling species' recruitment to experimental panels in two California harbors. We evaluated fouling and responses to hull-cleaning practices on nontoxic and toxic (copper-based) coated panels. Over one-month intervals, organisms recruited moderately or heavily to nontoxic coatings but there was very limited recruitment on copper coatings. Fouling on copper paint increased with exposure time. Frequent, gentle cleaning with California best management practices did not stimulate fouling growth, in contrast to Australian findings. Because nontoxic coatings do not inhibit fouling and because fouling increases on copper paints over time, companion strategies (e.g. hull cleaning) help reduce risks of spreading AIS among coastal ecosystems. Frequent, gentle cleaning reduces scratching of the coating and risks of transporting reproductive AIS. Overall, cleaning before departure, at waypoints and before returning may reduce AIS risks to coastal ecosystems. Boats arriving with heavily fouled hulls should be hauled for cleaning and removed organisms disposed on land. Boat operations, AIS and water quality should be considered in policies to protect coastal ecosystem services.

THE ECONOMIC IMPACT OF FRESHWATER INPUTS TO AN ESTUARINE FISHERY

Chris J. Kennedy*and Edward B. Barbier

Department of Environmental Science and Policy
George Mason University
4400 University Drive, MSN 5F2
Fairfax, VA 22030
ckenned7@gmu.edu

It is well documented that the productivity of estuarine and coastal ecosystems depends critically on upstream hydrology. However, there is limited information available to policymakers regarding the economic impacts of restricting freshwater flow to the coast. This research investigates the economic impact of freshwater inputs to coastal marshes in Georgia, USA, through examination of the commercial blue crab fishery. Blue crabs (*Callinectes sapidus*) are known to respond behaviorally and biologically to salinity changes in the estuaries in which they reside, and declining river flows and an increased incidence of severe drought are correlated with significant increases in estuarine salinity and declining fishery production over the past 50 years. We develop a structural bio-economic model incorporating multiple life stages that allows for the investigation of both direct and indirect effects of salinity on the productivity of the fishery. Our results suggest that a simple minimum-flow standard – by which river flows are maintained at a minimum of 50% of long-term seasonal averages – would have increased fishery revenue in Ossabaw Sound by 28% (approximately \$800,000) from 2002 through 2009. To our knowledge, this is the first study to place an economic value on freshwater as it relates to coastal fishery production.

MARACOOS INTO THE 21ST CENTURY: MOVING FROM OBSERVING TO FORECASTING IN ORDER TO SAVE LIVES, PROTECT LIVELIHOODS, AND BOOST THE ECONOMY IN THE MID-ATLANTIC

Gerhard F. Kuska* and Michael Crowley

Mid-Atlantic Regional Association Coastal Ocean Observing System – MARACOOS
318 South College Avenue
Newark, DE 19711
kuska@maracoos.org

The IOOS' Mid-Atlantic region extends 1,000 kms from Cape Cod to Cape Hatteras. It comprises ten states and the District of Columbia, five major urban ports and estuaries, and a wide continental shelf cut by multiple, deep shelf-break canyons. The region supports one quarter of the U.S. population, one quarter of U.S. maritime commerce, and both commercial and recreational fisheries. It also faces challenges from a century of industrialization, a growing coastal population, ongoing threats from tropical storms and nor'easters, climatic-scale warming trends, and growing demands on the nation's most congested electrical power grid. The Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS) represents the next generation in ocean observing and forecasting. Through its mission to seek, discover, share, and apply new knowledge and understanding of our coastal ocean, MARACOOS is applying the region's expertise to address some of society's most pressing challenges, including: Maritime Safety; Ecological Decision Support; Water Quality; Coastal Inundation; and Offshore Wind Energy. Through advanced data collection and modeling, MARACOOS is helping save lives and livelihoods, and maintaining the quality of life in the Mid-Atlantic Region.

ECONOMIC VALUES OF COASTAL EROSION MANAGEMENT

Craig E. Landry* and John C. Whitehead

Department of Economics, Institute for Coastal Science & Policy, and Center for Natural Hazards Research – Mail Stop 580
East Carolina University, Greenville, NC 27858
Phone: 252-328-6383
Email: LANDRYC@ecu.edu

The plan of this research is to conduct a survey of households in North Carolina in order to estimate non-market benefits and costs of beach erosion management alternatives, focusing on beach replenishment, shoreline armoring, and shoreline retreat. The survey will gather data on use (and non-use) of North Carolina's coastal beaches, perceptions of coastal resource quality, and knowledge of natural coastal processes. By combining information on beach users and non-users, we are able to represent diverse groups of stakeholders and conduct a comprehensive and comparative analysis of economic benefits & costs. Data collection will include revealed preference and contingent behavior data that will allow us to estimate beach recreation demand models. These models permit calculation of net economic value of recreation sites for visitors and to predict how behavior and value changes with erosion management regimes and coastal resource quality. In particular, the changes in resource quality we focus on are increasing beach width and negative environmental effects stemming from management (e.g. disruption of benthic habitats due to dredging, loss of beach habitat due to seawalls, beach litter due to retreat). Combined with information on economic expenditures, the results can also be used to estimate changes in economic impact associated with different management regimes and the resulting beach conditions. We will also collect contingent valuation data in order to measuring taxpayers' willingness to pay for beach erosion management projects. These data will include responses from both users and non-users, permitting estimation of non-use value.

FISH NURSERY FUNCTION OF OCEAN SURF-ZONE HABITAT: RESPONSE TO A HUMAN DISTURBANCE GRADIENT

Tom Lankford*, Ian Lipton, Lexi Perillo, Rachel Dixon, and Julia Haywood

Department of Biology and Marine Biology
University of North Carolina Wilmington
601 South College Road
Wilmington, North Carolina 28403
lankfordt@uncw.edu

The ocean surf zone provides essential habitat for a variety of coastal marine fishes. Surf zones are particularly important as juvenile nursery habitat. The nursery function of surf zone habitat may be compromised by human disturbances to adjacent beaches. Although shoreline development and sand renourishment are common practices on barrier island beaches of the southeastern U.S., their impacts on fish nursery function are poorly described. We are investigating the response of fish nursery function to beach disturbance by comparing the assemblage structure, density and nutritional condition of juvenile fishes sampled from beaches selected to represent a human disturbance gradient. Sampling sites include undisturbed (undeveloped and unnourished, n=3), moderately disturbed (developed but unnourished, n=2) and highly disturbed (developed and nourished, n=3) beaches in southeastern North Carolina. Nursery function is indexed based upon the diet and compositional analysis (tissue lipid content, ash content, somatic condition) of two surf-dependent species: Florida pompano (*Trachinotus carolinus*) and Gulf kingfish (*Menticirrhus littoralis*). Preliminary results suggest that highly-disturbed beaches differ in fish species composition compared to undisturbed sites, and that fish nursery function is compromised on highly-disturbed beaches.

**FISH UTILIZATION AND NURSERY FUNCTION OF OCEAN SURF-ZONE
HABITAT: SHORT- AND LONG-TERM EFFECTS OF BEACH RENOURISHMENT.**

Tom Lankford*, Edward Arb, Adam Branson and Drew Howard

Department of Biology and Marine Biology
University of North Carolina Wilmington
601 S. College Road
Wilmington, North Carolina 28403
lankfordt@uncw.edu

We describe the assemblage structure, seasonality and recruitment patterns of ichthyofauna utilizing shallow surf-zone habitats at Wrightsville Beach, North Carolina. Year-round sampling initiated in May 2004 is performed biweekly (May-September) or monthly (October-April) using a 30x2m bag seine. To date, 680 seine hauls have yielded >194,000 individuals representing 78 species and 30 families of fishes. Numerically-dominant species include *Membras martinica* (35% of total individuals), *Anchoa hepsetus* (28%), *Trachinotus carolinus* (10%), *Menticirrhus littoralis* (6%) and *Engraulis eurystole* (4%). Fish densities, species richness and diversity are positively correlated with water temperature, peaking during summer/early fall and declining during late winter. Surf sites appear to function as nurseries for several commercially-important species, especially *T. carolinus* and *M. littoralis* which recruit as small juveniles during May/June and remain until December. Sand renourishment of Wrightsville Beach during April 2006 and February 2010 resulted in high (>150 NTU) turbidities, reduced sediment grain sizes, altered beach morphology and reductions in benthic invertebrate densities. The response of the surf-zone fish assemblage to these disturbances will be discussed.

BUILDING RESILIENT COMMUNITIES USING A COASTAL VULNERABILITY INDEX - COMPARING EDISTO BEACH AND NORTH MYRTLE BEACH, SC

Sarah A. Latshaw* and Matthew J. Slagel

South Carolina Department of Health and Environmental Control
Office of Ocean and Coastal Resource Management (SCDHEC-OCRM)
1362 McMillan Ave., Suite 400
Charleston, SC 29405
latshasa@dhec.sc.gov

Coastal areas face considerable development pressures, which often lead to built communities threatened by chronic erosion, powerful storms, and gradual sea level rise, among other hazards. Given that over half of the U.S. population lives in coastal areas, coastal hazards have significant economic, social, and ecological impacts. In South Carolina, efforts to reduce hazard risks led to the 1988 Beachfront Management Act (BMA), which was implemented to protect “life, property, and unique habitats...for the future”. The BMA included regulations on beachfront construction/reconstruction, repairs, and erosion control structures, and it limited seaward movement of development by establishing both baseline and setback lines. Although these policies project long-term historical erosion rates 40 years into the future, they do not account for sudden shoreline changes due to storms or for sea level rise.

By creating a coastal vulnerability index, we can evaluate the areas within coastal communities that may be most affected by both chronic and episodic hazards. The index will include data on both the physical (elevation, long-term erosion rate, proximity to inlets, width of beach, etc.) and socio-economic (ability to fund future renourishment, local setback ordinances, etc.) aspects of the South Carolina coastline. Using these data, the project will focus on the vulnerability of two communities with different developmental patterns: Edisto Beach (lower development density) and North Myrtle Beach (higher development density). Armed with knowledge of the vulnerabilities of our coastal communities, we can work with local officials/communities to mitigate and adapt to risks from coastal hazards, while creating more resilient communities.

COASTAL MANAGEMENT DURING A TIME OF UNSETTLED LOCAL GOVERNANCE: A CHESAPEAKE BAY CASE STUDY

Lewie Lawrence* and Dr. Maurice Lynch

Acting-Executive Director
Middle Peninsula Planning District Commission
P.O.Box 286
Saluda, Va 23149

As the national, state, and local political and economic landscape reshapes, a new active voice is present within rural coastal local governments. This voice appears set on dismantling the traditional governmental structure used to protect, manage, control, and regulate the natural and manmade environment. This presentation will discuss how the new activists, well-documented within the Chesapeake Bay, Middle Peninsula and Peninsula, are reframing local public discourse using local media and public comment opportunities to support an agenda that differs from the traditional model of local and regional governance. Claims of local governments taking private property rights; padlocking drinking water supplies; placing the natural environment ahead of private property right; rejection of comprehensive planning, zoning, bike planning, conservation initiatives, and sustainability concepts in general. All of these claims are supposedly being driven and controlled by the United Nations and Agenda 21. These are the additional challenges that local government must address while keeping schools open, prisoners in jail, and disposing of solid waste. How or will communities reshape comprehensive plans? How will communities respond to mandates? How will elected official make decisions to protect and manage the coastal environment and govern accordingly?

PUBLIC PERCEPTIONS OF SEAWATER AIR CONDITIONING IN WAIKĪKĪ

Jonathan Lilley,* Craig Coleman, Darren T. Lerner, Denise Konan, and E. Gordon Grau

University of Hawai‘i Sea Grant College Program
2525 Correa Road, HIG 211
Honolulu, HI 96822
jclilley@hawaii.edu

Seawater air conditioning (SWAC) uses cold (~44°F) deep seawater to chill indoor air. Compared to traditional air conditioning systems, SWAC reduces electricity requirements by 70-90% and uses substantially less fresh water. It can also be used to generate fresh water. A SWAC system proposed for Waikīkī would save approximately 75 million kilowatt-hours of electricity (equivalent to about 170,000 barrels of oil) and 360 million gallons of fresh water per year. It would prevent the release of 80,000 tons of harmful emissions each year while reducing air conditioning operating costs by \$1-2 million annually. With Hawai‘i currently relying on residual fuel oil for 90% of its electricity generation, a SWAC system in Waikīkī would make a significant contribution to the state’s goal of a 70% reduction in fossil fuel use by 2030. We present the findings of a survey which investigated the attitudes of residents of O‘ahu toward SWAC. Survey respondents were questioned about their knowledge and opinion of SWAC, along with their views on Hawai‘i’s energy needs. We utilized both descriptive statistics and logistic regression analysis to understand differences in attitudes among various demographic groups and elicit characteristics that might lead a person to support or oppose SWAC development.

DEFINING ECOSYSTEM SERVICES: INSIGHTS FROM MARINE AND ESTUARINE GOAL SETTING FOR SOUTH FLORIDA

David K. Loomis* and Peter B. Ortner

Institute for Coastal Science and Policy
East Carolina University
250 Flanagan Building
Greenville, NC 27858

The purpose of this session is to present the concept of ecosystem services as developed through the Marine and Estuarine Goal Setting for South Florida (MARES) Project. The Project involves the development of *Integrated Conceptual Ecosystem Models* (ICEMs) for three sub-regions (Florida Keys & Dry Tortugas, Southeast Florida Shelf and Southwest Florida Shelf) and a *Total Marine System ICEM* integrating these with available *Conceptual Ecological Models* (CEMs) for Biscayne Bay, Florida Bay and the Caloosahatchee Estuary. A challenging aspect of the Project has been in defining and identifying “ecosystem services.” A simple definition of ecosystem services would be “the benefits that humans derive from the ecosystem.” However, developing a fuller understanding of which benefits are most relevant, how they relate to human society, and how they relate to the physical environment is not as simple. We propose a session having three speakers, each fully involved in the MARES Project who will each speak on the topic of ecosystem services as it has been developed through the Project. Ecosystem services will be defined, and located within a larger conceptual model (DIPSER). These three speakers will be allocated 45 minutes total. This represents the first half of this session. The three speakers will be: Peter Ortner, RSMAS, University of Miami, Joe Boyer, SERC – FIU, and Chris Kelble, NOAA AOML. The second half of the session will be a roundtable discussion, with audience participation being the goal. This larger discussion will generate a greater level of understanding and awareness of ecosystem services.

VALUATION OF ECOSYSTEM SERVICES: INSIGHTS FROM MARINE AND ESTUARINE GOAL SETTING FOR SOUTH FLORIDA

David K. Loomis* and Peter B. Ortner

Institute for Coastal Science and Policy
East Carolina University
250 Flanagan Building
Greenville, NC 27858

The purpose of this session is to present the concept of ecosystem services valuation as developed through the Marine and Estuarine Goal Setting for South Florida (MARES) Project. The Project involves the development of *Integrated Conceptual Ecosystem Models* (ICEMs) for three sub-regions (Florida Keys & Dry Tortugas, Southeast Florida Shelf and Southwest Florida Shelf) and a *Total Marine System ICEM* integrating these with available *Conceptual Ecological Models* (CEMs) for Biscayne Bay, Florida Bay and the Caloosahatchee Estuary. A challenging aspect of the Project has been determining how to “value” ecosystem services. A common and well recognized method is market economics. However, not all ecosystem services are exchanged in the market place. A second approach to ecosystem services valuation is non-market economics. A third set of values would be those having to do with social, historic or cultural values not readily measured in monetary terms. We propose a session having three speakers, each fully involved in the MARES Project who will each speak on the topic of ecosystem services valuation as it has been developed through the Project. These three speakers will be allocated 45 minutes total. This represents the first half of this session. The second half of the session will be a roundtable discussion, with audience participation being the goal. This larger discussion will generate a greater level of understanding and awareness of ecosystem services valuation.

WE'RE LOOKING OUT FOR YOU: USING INDICATORS TO OBSERVE SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONDITIONS AT MULTIPLE SCALES

Susan Lovelace*, Maria Dillard, David Hastings, Michael Jepson, Theresa Goedeke,
Lisa Colburn

NOAA/NOS/NCCOS
Hollings Marine Laboratory
331 Fort Johnson Road
Charleston, SC 29412
susan.lovelace@noaa.gov

Perceptive observation of economic, environmental, social and demographic situations strengthens policy formation, response planning and decision-making. Coastal resource management agencies, academic research programs and non-governmental organizations can contribute by developing indices which reflect community sustainability (including resilience), human security and well-being. The session will discuss several tools currently being developed within NOAA and elsewhere to support understanding and decision-making related to oceans, climate, health, well-being, and human security. These efforts are aimed at monitoring social, economic, and environmental conditions at varying scales, including global, national, regional, and community. Outputs include indices which attempt to characterize conditions and changes in society. Data compiled from primary and secondary sources support current and future information needs, operational monitoring, evaluation, methodological enhancement, and predictive modeling in a cost and effort efficient manner. Additionally, such research provides ways of examining the contributions of social and economic conditions to environmental health, and vice versa. For example, current efforts include local, place-based indicators developed to monitor the health of fishing communities, regional tools to monitor communities impacted by disaster, and national and global tools designed to observe human security. This extended session will focus on the development and use of indicators to measure and monitor the communities of different scales and constituencies as well as the implications for policy necessary for response planning and decision-making. Speakers include representatives from government, academic and private sectors; David Loomis and Shona Patterson, East Carolina University, Michael McDonald, University Maryland, Sam Brody, Texas A & M University, Manoj Shivlani, Center for Independent Experts and from NOAA David Hastings, Kristen Crossett, Michael Jepson, Maria Dillard and Susan Lovelace, session coordinator. Other conference attendees are asked to bring their expertise and experience to the discussion section of this session.

BALANCED GROWTH AS A SUSTAINABLE ECONOMIC DEVELOPMENT STRATEGY

Joe Lucente

Ohio State University Extension
One Government Center, Suite 550
Toledo, Ohio 43604
phone: (419) 213-2028
fax: (419) 213-4241
email:lucente.6@osu.edu

I will explore how linking land use issues and the health of Lake Erie maximizes the efficient use of infrastructure, conserves farmland, provides open space and recreational opportunities, and promotes compact development patterns that build on the unique qualities of communities to promote greater transportation choices. The strategy will help local governments plan for economic development opportunities and streamline decision-making processes. The plan should provide consistency and predictability for private and public development decisions, thus enabling more cost-effective development. Central to the implementation of the plan will be voluntary Watershed Planning Partnerships composed of representatives of local governments, planning agencies, councils of governments and special purpose authorities. Each partnership will develop a Watershed Balanced Growth Plan as a framework for coordinated, regional decision-making about how growth and conservation should be promoted and balanced in the watersheds. Watershed Balanced Growth Plans will not replace, but serve to augment comprehensive plans many communities create. They will be limited to the designation of two primary features: "Priority Conservation Areas" (PCA's) -- locally designated areas targeted for protection and restoration such as important ecological, recreational, heritage, agricultural, and/or public access areas that are significant for their contribution to Lake Erie water quality and the region's general quality of life, and "Priority Development Areas." (PDA's) -- locally designated areas where growth and/or redevelopment is especially encouraged to maximize development potential, maximize the efficient use of infrastructure, promote the revitalization of existing cities and towns, and contribute to the restoration of Lake Erie.

SUSTAINABLE FLORIDIANS: A STATEWIDE VOLUNTEER PROGRAM IN PINELLAS COUNTY, FLORIDA

Ramona Madhosingh-Hector

University of Florida, Pinellas County Extension
12520 Ulmerton Road
Largo FL 33774

The Sustainable Floridians Volunteer Program is a statewide education/community development program that teaches Floridians about resource conservation issues to improve the economic, environmental, and social sustainability of Florida communities. The program is a multi-department project facilitated by the Department of Family, Youth, and Community Sciences at the University of Florida. The program objectives include 1) motivating participants to implement energy and water conservation and efficiency actions, 2) promoting sustainability leadership within the community, and 3) developing volunteers. Pinellas County, the sixth most densely populated county in Florida, piloted the program in 2010. As one of 35 coastal counties, Pinellas is unusually “built-out” with a population of one million residents in an area of 273 square miles. This training program encourages participants to examine societal and personal values and attitudes related to ecosystem services. It also offers short, mid and long-term strategies to promote a balanced approach to resource use with personal and community scale action plans. Since its pilot phase, Pinellas County has trained 50 residents, recorded 1,260 hours of direct teaching, and more than 500 volunteer hours. By May of 2012, there will be one year’s worth of kWh usage, vehicle miles travelled and water usage from the first graduates of the program. Also tracked in the program is usage of the sustainable living devices that participants received – rain barrels, CFLs and compost bins. With a subject like sustainability, it is difficult to measure true success and secondary measures like participant numbers and volunteer hours allow Sustainable Floridians Volunteer Program to determine how successful the program has been. The tracking data and results of pre/post tests administered to participants provide a perspective for the value of the program in promoting lifestyle changes. Sustainable Floridians Volunteer Program graduates promote Extension through outreach efforts and share the sustainability message through peer-to-peer networking. The Sustainable Floridians Volunteer Program has proven successful at filling the need for sustainability education and creating motivated volunteers that are interested in promoting sustainable living behaviors and practices in Florida.

NONPOINT SOURCE POLLUTION FROM COASTAL BRIDGES

Daniel J. Marcucci*and Yuhong Wang

Planning Program
MS: 120planning
East Carolina University
Greenville NC 27858
marcuccid@ecu.edu

Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) in the US requires coastal states to develop nonpoint source pollution control programs. In recent years, the contribution of bridge deck runoff to nonpoint source pollution has been studied and is mitigated in many cases. However, there is very little research that indicates the significance of the bridge deck runoff into coastal receiving waters. Furthermore, there is limited research that even tests the appropriateness of using impact models developed for inland stream crossings for receiving coastal waters. This paper looks at the policy context for controlling nonpoint source pollution from bridge deck runoff into receiving coastal waters. It then evaluates the state of practice with respect to modeling and measuring pollutants, including the dominant form of analysis, the Simple Method. The paper finds that coastal conditions are different than inland conditions, and methods developed inland may not apply. Studies of inland bridges concentrate on pollution from deck runoff, where metadata and wind models suggest that coastal bridges have a profile of both airborne pollutants and stormwater runoff pollutants entering coastal waters. Furthermore nonpoint source pollution is dependent on weather, ambient air quality, traffic, and receiving water body. Studies from other coastal regions themselves may be poor analogues for a particular bridge. This paper then discusses possible mitigation measures such as bridge sweeping and stormwater collection and treatment. In conclusion further work is discussed that must be done in order to include coastal bridges in a nonpoint source pollution control program.

SEA-LEVEL RISE IMPACT IN FRANKLIN COUNTY: FLORIDA'S FORGOTTEN COAST

Ariana Marshall*and Marcia Allen Owens

NOAA Environmental Cooperative Science Center
School of Environment
Florida Agricultural and Mechanical University
Frederick S. Humphries Research Building
Tallahassee, FL 32307

South Florida is planning for 10.4-60 inches of sea-level rise by 2100 (Miami-Dade 2008; Southwest Florida Regional Planning Council 2010). Cited in this planning, is the estimated cost of \$345 billion of inaction if Florida does not commit to management for 36 inches sea-level rise (Stanton and Ackerman 2007). Currently Franklin (FR) County ranks thirdly statewide considering the land percentage inundated by 27 inches of sea-level rise (Stanton and Ackerman 2007). However, this ranking underestimates the impact of local ACF watershed dynamics. There is a need to further understand sea-level rise planning opportunities in northwest Florida. To do so, this study characterized the socio-economic impact of sea-level rise in FR. NOAA's Coastal Flooding and Sea- Level Rise tool was used to compare the physical sea-level rise vulnerability among FR census tracts. To understand socio-economic vulnerability in these census tracts, indicators which most explain variability in vulnerability between locales were selected (Boruff, Emrich and Cutter 2005; Oxfam America 2009). Rather than creating an updated census tract, SOVI, a proportional approach, was taken to quantify this impact. Development density is the only highly ranked SOVI indicator representing housing and construction trends, despite the fact that these trends are important in local community sea-level rise adaptation. Therefore, to quantify these trends, all US Census 2010 housing characteristics were also included in this study. Additionally, to identify the vulnerability of coastal construction, permitting clusters were identified by census tracts. Study results will be accompanied by implications for the articulation of public participation effectiveness through locally applying the policy window theory.

THE EVOLUTION OF TIDAL SHORELINE MANAGEMENT IN VIRGINIA: ADAPTIVE CHANGES PROMOTE BETTER INFORMED DECISIONS

Pamela Mason* and Carl Hershner

Center for Coastal Resources Management
Virginia Institute of Marine Science
College of William and Mary
PO Box 1346
Gloucester Point, VA 23062
mason@vims.edu

Virginia passed tidal wetlands protection legislation in 1972. The program was built as a state-local cooperative with local permit approval, state oversight by the Virginia Marine Resources Commission and advisory responsibilities assigned to the Virginia Institute of Marine Science. Local decisions are made by citizen wetland boards with varying knowledge of the resources and the regulatory landscape. Early on, VIMS sought to address this knowledge gap with project reviews and training efforts. These efforts appeared to slow wetland losses over the next couple decades, yet significant losses and miles of shoreline hardening proceeded through the 1980s and 1990s. Summaries of those cumulative losses published by VIMS in the mid-2000s highlighted the issue. This resulted in a change to the state's mitigation policy to fully implement no net loss in 2005. Concurrently, a new initiative for living shorelines was begun at VIMS. The effort started with one monitoring study and has evolved into GIS modeling for shoreline management, the development of decision tools for use by managers and property owners, scientific assessments of biotic responses to traditional and living shoreline projects and training and print publications. These proactive efforts are aimed at providing the best available advice to citizen decision-makers and property owners. The culmination of this work was the recent codification of a state policy to recognize living shorelines as the preferred management approach and require the development of a general permit and inclusion of shoreline management guidance in local comprehensive plans.

USING SCIENCE, ENGAGING THE PUBLIC: INVESTIGATING THE ROLE OF SCIENCE IN COLLABORATIVE MARINE MANAGEMENT

Meghan J. Massaua*

School of Marine and Environmental Affairs

University of Washington

3707 Brooklyn Avenue NE Seattle, WA 98105-6715

massam@uw.edu

Coastal and marine environments represent a true nexus between social and ecological systems, being both biologically diverse, and home to much of humanity. To address the complex challenges these systems face, collaborative approaches involving multiple interests are emerging. Understanding these institutions can help develop successful policy processes and solutions. This research investigates the role of science in collaborative environmental management in marine systems. More specifically, the sources of scientific information, the institutional features that structure the use of science, and the importance of specific attributes of the science, itself, are investigated. Using the case survey method to explore 30 case studies in marine, estuarine, and coastal systems across the U.S., several aspects of institutional arrangement, as well as qualities of science itself, such as the source of information (e.g. academic, government, industry, etc.) and peer review, structure the role that science plays in collaborative environmental management are established. Truly participatory methods of engagement are more likely to result in the use of science than more restrictive, one-way approaches. Uncertainty serves as a source of confusion in collaborative management, reducing understanding and information gain. Additional work is necessary to determine institutional qualities that favor both the use of science and the production of policy and management outputs. Ultimately, elucidating the role of science in collaborative environmental management may help design successful policy processes, but it is only part of the complex institutional arrangements required for successful outcomes that improve environmental conditions.

THE RESTORATION OF THE MOUTH OF THE HOUSATONIC RIVER, CT: ONE POINT AT A TIME.

Jennifer H. Mattei*, Mark A. Beekey, Anton Leenders, and Jennifer Gazerro

Department of Biology
Sacred Heart University
Fairfield, Connecticut 06825
matteij@sacredheart.edu

Coastal regions that are located at the mouths of major rivers in areas with high human population densities become polluted, compacted, invaded, degraded and lose their primary ecosystem functions. At Stratford Point, Connecticut we have begun coastal dune upland and salt marsh restoration after intensive clean-up efforts to remove tons of lead shot deposited at the site over a 50 year period. The Connecticut Audubon Society, The Nature Conservancy, DuPont Corporation, Sacred Heart University, The Housatonic River Estuary Commission and local community members have participated in this project. The National Fish and Wildlife Foundation funded the project with a goal to use the methods developed as a model for other coastal areas. Instead of boulders and rip-rap, we have used Geotubes to abate wave energy, prevent erosion and enhance sand deposition at the site. We restored dunes and stabilized them with native grasses, perennials, woody trees and shrubs. The local fire department was collaborated by implementing a controlled burn to decrease the number of invasive plant species and to rid the area of thatch build-up, thus reducing the potential for a devastating wildfire. Baseline data from Statford Point, and from a reference site (Milford Pt.), that was collected before the restoration of plant and animal species will be compared to species that re-colonize the restored coastal dune system. Success will be measured by examining the number of native plant species that become established and by the number of bird and insect species that utilize the area compared to pre-restoration activities.

MAKING COMMUNICATION MAKE A DIFFERENCE: LESSONS FROM SOCIAL MARKETING

Linda J Maxson

Forterra
615 Second Avenue, Suite 600
Seattle, WA 98104
lindam@cascadeland.org

Response strategies to emerging coastal issues and threats traditionally include science and risk communication, mitigation and adaptation planning, and local-scale decision support tools. This presentation makes the case for including values research and social marketing as critical communication response strategies. Investments in coastal issues science, while arguably insufficient, have resulted in significant improvements in understanding of coastal processes across temporal and spatial scales. Subsequent investments in education and outreach have shown results with increased understanding by students and various target audiences. Why, then, do we as a community continue to see little consequent change in behavior at broader societal levels? Training on presenting scientific data in a more compelling manner is only part of the answer. Scientific data shows the way humans respond to cognitive dissonance is related to ‘fight or flight’ response. Evidence does not change minds when the information presented conflicts with deeply-held beliefs and values. By identifying shared values, and using those shared values as the foundation for communication strategies, coastal practitioners will experience fundamental improvements in outcomes. Further, the tenets of social marketing (the impact of an emotionally compelling story; the effectiveness of the third-party validator; the power of pre-commitment) all provide case studies for including social marketing in the tool kit of response strategies.

IMPLICATIONS OF PLUGGING GRID DITCHES IN MID-ATLANTIC COASTAL SALT MARSHES: VEGETATION CHANGES, MOSQUITOES, CARBON SEQUESTRATION, AND KEEPING PACE WITH SEA LEVEL RISE

Erin McLaughlin*, Kevin Smith, Donald Webster, Roman Jesien, Daniel Murphy, Paul Leisnham, and Brian Needelman

Maryland Department of Natural Resources
580 Taylor Avenue
Annapolis, MD 21401

By 1938, over 90% of tidal salt marshes from Maine to Virginia had been grid ditched in an attempt to control mosquito populations. Mosquito populations were thought to be reduced by draining marsh ponds and depressions and lowering the water table of the marsh. However, ditching was found to be only moderately effective in reducing mosquito populations, and altering the hydrology changed many marsh characteristics. An estimated 70,000 acres in the Maryland Coastal Bays watershed have been impacted by grid ditching. Grid ditching resulted in shifts in marsh vegetation composition, and led to the extirpation of SAV in ponds. In addition, draining pool and panne habitats within the marsh caused declines in mollusks and crustaceans important to bird and marine animal diets, and reduced access to prey for avian predators by eliminating shallow foraging habitat. In an effort to restore the natural marsh hydrology, we have installed ditch plugs at two Wildlife Management Areas in Worcester County, Maryland. Our goals for the restoration were to improve water quality and increase the diversity of marsh habitats for invertebrates, fish, birds, and other wildlife. Vegetation, water quality, fish, and SAV in the marshes have been monitored both pre-restoration and for several years post-restoration. Recently, we have collaborated with University of Maryland to determine how restoring the marsh hydrology affects mosquito populations, carbon sequestration, and accretion rates. It is our hypothesis that restoring the natural marsh hydrology will enhance marsh accretion and help the marshes keep pace with sea level rise.

GIS SPATIAL PLANNING FOR AN OFFSHORE WIND ENERGY TRANSMISSION SYSTEM

Sara Mochrie* and Jenny Mogavero

Ecology and Environment, Inc.
368 Pleasantview Drive
Lancaster, New York 14086
smochrie@ene.com

Marine spatial planning was applied to support development of the Atlantic Wind Connection project, a first-of-its-kind subsea high-voltage direct current (HVDC) electrical transmission backbone. This project will help foster development of wind energy off the Atlantic coast, between the New Jersey/New York metropolitan area and Virginia, by connecting multiple offshore wind farms to the areas of peak demand through the most suitable point of interconnection within the terrestrial transmission grid. To determine the best route for the multi-phase project, Ecology and Environment, Engineering P.C. (EEEPC) first established a siting envelope between 3 nautical miles (nm) and 30 nm offshore of the five affected states. Geographic information system (GIS) tools were then employed to select feasible corridors within the siting envelope through a tiered analysis that considered geophysical, biological and socioeconomic data layers, covering a spatial range of over 2,600 square miles. Finally, an optimal route for the transmission cable was identified through the remaining federal lease blocks. The use of GIS to evaluate constraints and minimize impacts to a number of stakeholders and ecological resources protects important resources within the potential project area and, in turn, could serve as a model for better collaboration between different concerned parties and regulatory groups.

OREGON'S DIGITAL ESTUARIES: MEETING THE CHALLENGES OF AN EVER-CHANGING COASTAL PLANNING LANDSCAPE

Cinamon Moffett

NOAA Coastal Fellow
Oregon Coastal Management Program
Department of Land Conservation and Development
810 SW Alder Street, Unit B
Newport, OR 97365
541-574-4514
cinamon.moffett@state.or.us

Coastal estuaries are highly productive yet fragile environments that provide essential resources and services to many coastal communities. These environments must be carefully managed to preserve physical, biological and economic system functions. Coastal planners are often tasked with trying to strike the balance between conservation and growth in these highly dynamic and complex ecosystems. Oregon's historically successful comprehensive Estuary Management Plan was developed in the early 1980s. In this plan, the state set land-use goals which local communities addressed in their comprehensive plans. Recent advances in information technology, expanded scientific data, a changing climate, and fundamental economic shifts in coastal communities have created a need to modernize information that supports local estuary planning. This project will aid local government in meeting the challenge of coastal planning in a dynamic landscape by identifying what new information could guide estuary planning, creating digital products, and assembling them into a coherent framework. This project aims to streamline work flow by creating up-datable digital products to inform estuary planning along the coast of Oregon now and well into the future. This project is comprised of three phases: 1) an estuary needs assessment to systematically investigate what services or products are needed to support Oregon's estuary planning at the local level, 2) design, create, and package support products, and 3) deliver new tools to users and provide training to support implementation of these new products.

EVALUATING BIOLOGICAL AND SOCIOLOGICAL CONCERNS IN THE SECTION 7 PROCESS: USING CONSERVATION UNITS TO PROTECT STURGEON POPULATIONS

Jolvan Terez Morris*, Marcia Allen Owens, Kimberly Damon-Randall, and Charles Jagoe

Florida Agricultural and Mechanical University
School of the Environment
1515 MLK Blvd, Suite 305 D
Tallahassee, Fl. 32307

The U.S. National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) is responsible for marine species, including some marine mammals, and anadromous fish. Part of NMFS's mandate to ensure that actions authorized by any Federal agency do not jeopardize endangered or threatened species is carried out in part, through the Section 7 consultation process. In the past, consultation decisions have been used as a standard for measuring agency performance with respect to the Endangered Species Act (ESA), however research data pertaining to Section 7 are sparse for the U.S. Fish and Wildlife Service (FWS), and even more so for NMFS. This thesis study is an evaluation of species that are managed as conservation units, with the potential to be listed as distinct population segments (DPSs) under the ESA. Central to the research agenda is to use the information gained from case studies on the Holyoke Hydroelectric Project and six other contemporary consultations; and a survey of Fisheries biologists to develop recommendations that aid in making Section 7 consultations more efficient for Section 7 biologists within NOAA. A secondary objective of this study is to use the information obtained by answering the research questions of this study to generate theoretical insight, point out areas within which Section 7 policy might fruitfully be assayed, and provide a basis for making recommendations for recovery efforts and Section 7 processes that involve Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*).

ECONOMIC IMPACTS OF BEACH RENOURISHMENT PROJECTS IN THE MID-ATLANTIC

Lou Nadeau* and Melanie Sands

Eastern Research Group, Inc.
110 Hartwell Ave.
Lexington, MA 02421
email: Lou.nadeau@erg.com

The economic values generated by the nation's shoreline can be significantly impacted by erosion. As beaches erode their value for tourism and recreational uses diminish leading to reduced consumer spending in coastal economies which impacts jobs and tax revenues. This study starts with the question: what are the economic consequences of eliminating current renourishment projects in Delaware, Maryland, and New Jersey? Although complete elimination of renourishment projects is not a realistic scenario, examining this scenario would allow for estimating the value of maintaining beaches in the three states. The study will identify a set of renourishment projects currently being conducted by the US Army Corp of Engineers (USACE) in the three study states, determine the impact of eliminating those projects on the affected beaches (i.e., what the beaches may look like if the projects are discontinued), estimate the reductions in tourism related to increased erosion from not maintaining the projects, and finally estimate the reduced spending, job loss, and reduced tax revenues associated with the loss in beach-related tourism. The results of this work will allow policy makers to better understand the value that renourishment projects have for sustaining economic conditions in coastal communities, including the impact that renourishment projects have on state-level tax revenues.

MEASURING THE SOCIAL IMPACT OF FISHERY MANAGEMENT PROGRAMS IN THE NORTHEAST AND MID-ATLANTIC

Lou Nadeau*, Andrew Kitts, Matt McPherson, Richard Pollnac, Dave Loomis, Shona Paterson, and Sarah Young

Eastern Research Group, Inc.
110 Hartwell Ave.
Lexington, MA 02421
Lou.nadeau@erg.com

The National Marine Fisheries Service's (NMFS) Northeast Science Center's Social Science Branch (SSB) in Woods Hole, MA will be implementing a socioeconomic survey of fishing crew and owners in the Northeast Region (New England and Mid-Atlantic) beginning in the fall of 2011. The purpose of the survey will be to provide for the ongoing collection of social and economic data related to fisheries and their communities. These data will support fishery performance measures recently developed by SSB. Such measures include financial viability, distributional outcomes, stewardship, governance and well-being. Although data to support some indicators are already routinely collected by NMFS, this survey will fill in the gaps and allow SSB to collect trend data needed for more thorough analysis of changes in the fisheries, including impacts from changes in regulations. In implementing fishery policies and management programs, there is a need to understand how such policies and programs will affect the social and economic characteristics of those involved in the commercial fishing industry. This presentation will summarize the performance measures developed by SSB, the data that will be collected through the survey (e.g., key demographics, measures of well-being, governance, economic data, etc.), and the overall implementation approach (i.e., survey design and implementation issues). If available, the presentation will also include initial tabulations of data from the survey and describe lessons learned from survey implementation.

BAHAMIANS AND CLIMATE CHANGE: AN ANALYSIS OF THE POLICIES AND ATTITUDES DRIVING COASTAL DEVELOPMENT

Rhianna Neely and Marcia Owens

School of the Environment
1515 S Martin Luther King Jr. Blvd.
307 FSH Science Research Center
Tallahassee, FL, 32307
Rhianna1.neely@famu.edu

Policies related to Climate Change and Small Island Developing States (SIDS) depend on value-driven decisions made in the context of uncertainty and complex socio-economic, cultural and political relationships. This research analyzes climate change (CC) risk perception among Bahamians. Many Bahamians do not understand the value and or sensitivity of the natural resources to CC. Prosperity for many has historically been linked to the tourism industry. Pro-development concerns overshadow the need for conservation of, and adaptation to a changing environment. Coastal development would have strong negative effects on the coral reef ecosystem and would exacerbate some of the negative effects associated with CC. Extraneous development would put Bahamians at even more at risk for the negative impacts associated with CC. This research would establish a baseline for what Bahamians think CC is, how it affects them, their environment, and the natural resources of the Bahamas. This research proposes to include the Bahamas in the active decision making process while increasing the knowledge base of Bahamians toward CC and coastal development. Secondly, this research proposes to evaluate the current Climate Change adaption policies of the Bahamas. It will also present new CC policies to fill potential gaps in adaptation strategies in an attempt to better prepare the Bahamas and SIDS for the impacts of CC. It will also help Bahamians to understand what they can do at the individual level to better prepare themselves for the effects of Climate Change.

MITIGATING FOR LOSS OF SANDY BEACH ECOSYSTEM SERVICES FROM THE ADVERSE IMPACTS OF SHORELINE ARMORING ON CALIFORNIA BEACHES

Chad Nelsen

Surfrider Foundation
PO BOX 6010
San Clemente, CA
cnelsen@surfrider.org

California's is being armored in response to coastal erosion and the California Coastal Commission is struggling to determine the value of beach loss to mitigate for adverse effects from the construction of shoreline protective devices. To mitigate for the damages of beach loss, the California Coastal Commission requires in-lieu mitigation for loss of sand and beach recreation due to passive erosion from sea walls. Their methods and approach are inconsistent and fail to account for all services that beaches provide. Consistent and more accurate methods to estimate the total economic value of lost beach ecosystem services from shoreline armoring impacts are needed to determine appropriate in-lieu mitigation fees and to ensure the public is being properly compensated for lost recreation and beach ecosystems services. We provide conceptual service-to-service and a demand-based models to address in-lieu mitigation, critique recent Coastal Commission projects, discuss limitations to value beach ecosystem services and provide recommendations to improve valuation of beach services used for in-lieu mitigation.

COASTAL RESILIENCE CALIFORNIA: USING A MULTI-BENEFIT PLANNING FRAMEWORK TO ADVANCE CONSERVATION AT THE LAND-SEA INTERFACE

Sarah Newkirk* and Mary Gleason

The Nature Conservancy – California Coastal and Marine Program
99 Pacific Street
Monterey, CA 93940
(415) 730-7437
snewkirk@tnc.org

Estuaries are among the most ecologically rich and complex areas on earth, providing critical habitat for birds, fish, and many other species. Many estuarine watersheds are also places of dense human habitation. If conservation projects in estuaries and adjacent lands are to succeed, they need to reconcile the objectives of land use and other human activities with conservation objectives. *Coastal Resilience* is a framework developed by The Nature Conservancy that encourages and supports analysis and visualization to identify multiple benefit solutions to critical environmental problems. It does this through science, decision-support tools, partnerships and policy:

- We advance the science of some facet(s) of a threat or resource;
- We promote extensive stakeholder engagement to identify the local risks and values, and understand the threats to coastal ecological, social and economic assets;
- We promote the development a database and decision-support tool to visualize multiple resources, threats and alternative strategies.
- We encourage the collaborative examination of options in practice and policy for reducing threats and advancing multi-benefit strategies.

The Nature Conservancy developed the Coastal Resilience framework for climate change adaptation planning. However, in California, we are using the framework to provide a unified approach to collaborative conservation in estuaries, with three different conservation themes: climate change, conservation of nursery habitat, and restoration of estuaries for salmonids. This talk will discuss the full suite of conservation applications of the Coastal Resilience approach in California, highlighting the importance of identifying high-leverage conservation strategies that meet ecological, social and economic objectives simultaneously.

**INTEGRATING HUMAN DIMENSIONS INTO CLIMATE CHANGE
VULNERABILITY ASSESSMENT: DATA AND ANALYSIS FOR CONSIDERING
EQUITY AND COMMUNITY ISSUES IN THE ADAPTING TO RISING TIDES
PROJECT**

Heidi Nutters

San Francisco Bay Conservation and Development Commission

50 California St., Suite 2600

San Francisco, CA 94111

heidin@bcdc.ca.gov

Building resilience within communities requires successfully integrating socio-economic and environmental factors into research and planning projects. In the Adapting to Rising Tides (ART) project, staff are working to understand two key questions: a) How will climate change impacts of sea level rise and storm events affect the future of San Francisco Bay Area communities, infrastructure, ecosystems and economy, and b) What approaches can we pursue, both locally and regionally, to assess challenges, thereby reducing and managing risks? The ART project has recently completed a vulnerability assessment as a first step in addressing these questions. To support a balanced approach, society and equity, governance, environment and economy were all considered for key assets such as airports, seaports, and parks. Equity considerations are of particular concern because communities across the San Francisco Bay Area have seen a rise in income disparities that have had significant effects on health and quality of life for many residents. In addition, supporting planning for equitable development builds resilience and brings the local knowledge and the contributions of disadvantaged communities into the process. Society and equity were addressed in the ART project through communication and outreach efforts, leveraging partnerships and using metrics to define and understand concerns for communities within the study area. This presentation will highlight the efforts taken in the ART project to address equity considerations, and the human dimensions of understanding vulnerability to sea-level rise and flooding.

ENHANCING CLIMATE OUTREACH IN COASTAL AREAS OF THE U.S. SOUTHEAST AND CARIBBEAN

Kasey Jacobs*, Geno Olmi, Stephanie Fauver, and Jessica Whitehead

National Oceanic and Atmospheric Administration
2234 South Hobson Ave.
Charleston, SC 29405-2413
Geno.olmi@noaa.gov

Outreach and extension professionals in coastal areas of the US southeast and Caribbean interact with a broad range of stakeholders that are likely to be affected by climate change impacts. During a workshop in 2010, professionals shared information about attitudes and concerns of their stakeholders and their own needs for tools and information to better prepare their stakeholders for addressing climate change. Climate impacts of greatest concern to the stakeholders were flooding, due to increased rainfall, inundation, and sea level rise, and the impacts of such elevated water levels on infrastructure, shorelines, and natural systems, especially during storms. The ability to plan for such impacts was deemed a high priority. Barriers to educating constituents included the diversity of audiences and their specific information needs, the amount and complexity of information on climate change, and the views of some stakeholders toward climate change. Barriers to stakeholders acting on climate change included the magnitude of the problem, trusting information sources, the time frame to see impacts occur, costs of taking action, and political will. Participants identified means to improve climate outreach in the region including better understanding the audiences, improving the content and consistency of the message, being locally relevant, enhancing the tools and materials available to practitioners, and building a community of practice to share knowledge and better coordinate approaches. Subsequent work identifies approaches to integrate climate information in hazard planning.

EXPLORING OPTIONS FOR RESOURCE USE AND MANAGEMENT THROUGH A GRANT COMPETITION

Stephanie Showalter Otts

National Sea Grant Law Center
University of Mississippi
Kinard Hall, Wing E – Room 256
University, MS 38677
Email: sshowalt@olemiss.edu

In March 2010, the National Sea Grant Law Center funded eleven research and outreach projects on law and policy issues related to coastal management. The Law Center proposes this panel session to facilitate the dissemination of the knowledge gained through this grant competition. Sara Gosman (University of Michigan) is examining the legal framework governing two current threats to the water resources of the Great lakes: aging pipelines carrying hazardous liquids and hydraulic fracturing of oil and gas wells. This presentation will discuss the results of a legal research project, focusing on the legal requirements for each activity, proposed legislative and regulatory changes, and disposal of the fluid. Read Porter (Environmental Law Institute) is analyzing the Gulf of Mexico commercial red snapper fishery to determine how the implementation of catch share management in that fishery has affected compliance behavior and enforcement needs. This presentation will focus on the study's preliminary conclusion that catch share management may produce compliance benefits, but that adequate investment in enforcement is needed to safeguard those benefits. Natalie Springuel (Maine Sea Grant) is leading an effort to understand the legal barriers and opportunities to developing business partnerships between fisheries and tourism in Maine. Both industries face significant barriers that prevent them from moving forward, including issues related to liability, contracting, permitting, and licensing. This presentation will share the results of a detailed industry needs assessment, outline possible solutions for overcoming legal barriers, and provide an overview of an innovative outreach plan.

IMPROVING COMMUNITY PLANNING FOR SEA LEVEL RISE, FLOODING, AND COASTAL STORMS THROUGH A GRANT COMPETITION

Stephanie Showalter Otts

National Sea Grant Law Center
University of Mississippi
Kinard Hall, Wing E – Room 256
University, MS 38677
sshowalt@olemiss.edu

In March 2010, the National Sea Grant Law Center funded eleven research and outreach projects on law and policy issues related to coastal management. The Law Center proposes this panel session to facilitate the dissemination of the knowledge gained through this grant competition. Tara Owens and Andy Bohlander (University of Hawaii Sea Grant Program) are leading an effort to analyze the existing policy framework for regulating development in the shoreline areas of Maui and Hawaii Counties. This presentation will discuss the team's analysis of the existing rules and recommendations to support adaptive planning for sea level rise. Julia Peterson (New Hampshire Sea Grant) is collaborating with Vermont Law School to answer legal and policy questions raised by communities considering adoption of an updated set of 100-year flood maps developed by a team at the University of New Hampshire. This presentation will describe the mapping project, the legal research findings, and the benefits and challenges of interdisciplinary approaches and community engagement in developing local-scale decision support tools. Robert Thompson (University of Rhode Island) is developing a guidance document to help communities shorten the time between the adoption of improved building standards and the incorporation of those standards into the building stock. Building codes are critical tools for developing hazard resilience communities; however, officials often do not appreciate how long it takes for building code improvements to reduce the vulnerability of the building stock. This presentation will discuss how communities can expedite the incorporation of new standards through legal mechanisms and financial incentives.

REDUCING NONPOINT SOURCE POLLUTION THROUGH A GRANT COMPETITION

Stephanie Showalter Otts

National Sea Grant Law Center
University of Mississippi
Kinard Hall, Wing E – Room 256
University, MS 38677
sshowalt@olemiss.edu

In March 2010, the National Sea Grant Law Center funded eleven research and outreach projects on law and policy issues related to coastal management. The Law Center proposes this panel session to facilitate the dissemination of the knowledge gained through this grant competition. Laurie Fowler (University of Georgia) is developing a guidebook for local governments in the South Atlantic Region on how to select, plan, and implement nonpoint source (NPS) pollution control strategies to help protect and restore inland and coastal waters. The guidebook includes information on the need for local control of NPS, control strategies, model ordinances, case studies, and a reference section. This presentation will provide an overview of the guidebook and the development process. Kenneth Kilbert (University of Toledo) is organizing an interdisciplinary symposium to discuss legal and scientific tools for controlling harmful algal blooms (HABs), a growing problem in Lake Erie for recreation, tourism, fishing, aquatic life and human health. This presentation will highlight the symposium's major outcomes including existing legal mechanisms, recommendations for legal reform, and best practices to reduce phosphorus loading to Lake Erie and its tributaries. Ross Pifer (Penn State University) is creating an educational program to assist dairy and other agricultural professionals in Pennsylvania on the continuing development and current state of the legal framework for regulation of agricultural operations within the Chesapeake Bay Basin. This presentation will discuss the compilation of relevant legal developments, in-person presentations at major agricultural events, and dissemination of information through web-based resources and programs.

40 YEARS OF CZMA: IS IT TIME TO INTEGRATE MARINE SPATIAL PLANNING WITH WASHINGTON STATE'S PROGRAM?

Rebekah R. Padgett*, Joe Burcar

Washington State Department of Ecology
Shorelands and Environmental Assistance Program
3190 160th Avenue SE
Bellevue, WA 98008 USA
rebekah.padgett@ecy.wa.gov

The 40th anniversary of the Coastal Zone Management Act (CZMA) in 2012 provides an opportunity to reflect upon this federal law and its role in managing coastal resources. Marine spatial planning (MSP) is an exciting tool intended to facilitate ecosystem-based management (EBM). Both east and west coast states are considering how to utilize MSP to address issues ranging from endangered species recovery to emerging issues such as ocean energy. Washington was the first in the country to achieve a federally-approved state CZM Program (CZMP) and now, 40 years later, is considering how to integrate MSP. In 2010, legislation was passed, requiring an assessment of how MSP fits into existing coastal management authorities within the State. The legislation also includes a requirement to establish a framework for addressing ocean energy. Through Washington's CZMP, the State has flexibility in how it adapts federal goals for protection and restoration of coastal resources, to help define the appropriate level of development related to state and local interests. As Washington State looks forward, one of the first questions that should be answered is how MSP fits in with current regulatory authorities, or if it should be utilized as a non-regulatory stakeholder facilitation tool. For example, proposals for tidal energy projects have been moving through existing permitting processes—how would the State's integration of MSP with the CZMP affect these existing efforts? Would zoning ocean energy in state waters preclude proposed sites? And as a tool for addressing ecosystem-wide issues, could MSP supplant existing regulatory authorities?

THE USE OF COASTAL AND MARINE SPATIAL PLANNING FOR SELECTING POTENTIAL UPLAND AND COASTAL ALTERNATIVE DISPOSAL SITES FOR DREDGED MATERIAL

Stacy Pala*

Battelle
397 Washington Street
Duxbury, MA 02332
abramson@battelle.org

Coastal and marine spatial planning (CMSP) is a tool that provides the analysis and understanding of the spatial and temporal distribution of human activities in marine areas needed by Coastal Managers to make more informed and ecosystem-based decisions to achieve ecological, economic, and social objectives. In this case study, CMSP was used to select potential alternative disposal sites for dredged material within the Long Island Sound region, including 1) upland and alongshore disposal sites (including beneficial use alternatives), and 2) sediment de-watering and re-handling sites. Potential sites were identified and characterized for their existing uses, size, location, potential to accept dredged material, special conditions, and costs for use. Screening data were then compiled from several sources, including phone interviews with site owners, aerial photos, municipal land records, local planning and zoning officials, State and Federal GIS data layers, and New York State coastal management programs. Sites were visualized and screened against selection criteria using Google Earth™ mapping services to eliminate those sites which are not likely feasible due to significant resource impacts, competing land uses, municipal zoning requirements, and other factors. Those sites that did not meet these requirements and sites where owners had no interest or regulatory ability to accept material were then removed from the inventory. This project demonstrates a proactive, regional, and integrated decision-making process supported by CMSP, which can be applied on varying scales to address multiple uses of the coasts and oceans.

CLIMATE ADAPTATION AND THE CALIFORNIA COASTAL ACT: PREPARING THE COAST FOR THE FUTURE

Hilary Papendick

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105
hpapendick@coastal.ca.gov

Climate change is a significant challenge for the California coast. In particular, flooding and erosion from accelerated sea level rise could have serious consequences for coastal resources, including loss of wetlands and environmentally sensitive areas, loss of public access areas, and property damage to historic communities, agricultural sites, and scenic highways. The Coastal Act of 1976 mandates the California Coastal Commission (CCC) to “protect, conserve, restore, and enhance” the state’s coastal resources for the future. The Act provides the basis for the Commission to adapt the state’s coastal management policies to cope with anticipated climate change impacts. This poster presents the lessons learned from the CCC’s involvement in existing climate adaptation efforts in the coastal zone and provides recommendations for how the Commission can further support local government adaptation efforts, within the context of the Coastal Act. The Commission is at the forefront of climate adaptation planning and is engaged in numerous efforts and partnerships to support local governments in preparing for climate change, including climate adaptation workshops, needs assessment surveys, vulnerability assessments, outreach events, and the development of policy guidance and technical resources. The goal of the Commission’s involvement is to help ensure that climate change is effectively integrated into coastal management decisions throughout the state, including Local Coastal Programs, or plans that guide the development and protection of coastal resources at the local level.

COLLABORATION AND ACTION NEEDED TO ADDRESS OCEAN-RELATED IMPACTS OF CLIMATE CHANGE ON HUMAN AND NATIONAL SECURITY

Robbin Peach

The Collaborative Institute for Oceans, Climate and Security
University of Massachusetts-Boston
robbin.peach@umb.edu

Forward thinkers across disciplines are raising awareness about the effects of a changing climate on national and human security. Specifically, a new focus is emerging on how climate change impacts ocean systems and the oceans' subsequent vital role in exacerbating or mitigating these impacts. Thus, understanding the inter-connectedness between oceans, climate and security is increasingly crucial to our collective future. Ocean acidification and warming, melting polar ice and sea level rise are each examples of critical threats to human populations, natural systems and global security. The first Global Conference on Oceans, Climate and Security (GCOCS) was designed to raise the awareness level of the threat of climate change to our oceans and the consequent threat to our human and national security; identify and prioritize the knowledge gaps in science and technology which inhibit understanding, response and adaptations to future threats; and generate comprehensive human security policy and governance recommendations reflecting the climate, ocean and security continuum. This presentation will give an overview of the conferences findings and actions recommended. Robbin Peach, CIOCS Executive Director, will present and facilitate a panel discussion with each of the GCOCS track chairs.

LESSONS LEARNED FROM THE KING TIDES PHOTO INITIATIVE: USING HIGH TIDE IMAGES AND SOCIAL MEDIA TO RAISE AWARENESS ABOUT SEA LEVEL RISE

Marina Psaros, Heidi Nutters, and Hilary Papendick

San Francisco Bay National Estuarine Research Reserve
3152 Paradise Drive
Tiburon, CA 94920

Communicating about climate change has proven challenging for scientists and policymakers. Appeals have failed when they are too global in nature, or do not engage people in a meaningful way. Recent research suggests that people's direct experiences with flooding play a significant role in their willingness to act on climate change. The King Tides Photo Initiative is addressing the communications challenge by encouraging citizens in coastal communities to photograph the high water and coastal hazards associated with King Tides and to share these images through social media. These pictures preview how our shorelines are changing and what our daily tides may look like in the future. In addition, the images create a powerful argument for proactive planning to create resilient coastal ecosystems and communities, today and in the future. The Initiative offers a fun and unique way to engage the public on climate change. First started in Australia in 2009, King Tide Initiatives are now active in eastern and western coastal states in the United States, and in British Columbia, Canada. The panel will include representatives from various King Tide Initiative programs in the United States and potentially Australia, and will be moderated by Marina Psaros of the San Francisco Bay National Estuarine Research Reserve. Panelists will share their approach, lessons learned, and plans for the future in brief 10-15 minute presentations. The presentations will be followed by an informal discussion and a question and answer session.

STRONG PARTNERSHIPS, BETTER DECISIONS...COASTAL MANAGEMENT IN PLACENTIA BAY, NL

Bobbi Rees

Department of Fisheries and Aquaculture
Government of Newfoundland and Labrador
30 Strawberry Marsh Road, P.O. Box 8700
St. John's, NL A1B 4J6

Fisheries and Oceans Canada and the Province of Newfoundland and Labrador are working together to ensure Integrated Management is more than just a buzz word in Placentia Bay. The federal and provincial governments have come together to bring the various user groups of Placentia Bay to one table. It is expected that conflicts may arise when various groups value the same resource for different purposes. However, enhanced knowledge and understanding of regional issues due to increased dialogue and information sharing have created strengthened relationships, as well as a willingness to work together. The need for integrated management in Placentia Bay was first realized in the early 1990's when a Public Review on Tanker Safety and Marine Spills Response Capability identified Placentia Bay as the marine area with the highest potential for an oil-related environmental accident in Canada. Since the Placentia Bay region also supports a traditional commercial fishery, an aquaculture industry, tourism and recreation, as well as continued growth in the oil and gas/shipping industries, there existed an opportunity and a need for sustainable marine/coastal development to support a strong economy involving many industries. The Placentia Bay Integrated Management Planning Committee (PBIMPC) was initiated in 2000 as a Fisheries and Oceans Canada/Newfoundland and Labrador government partnership. The Committee has the following mission statement: "Maintain the ocean and coastal waters of Placentia Bay as a flourishing place where a high quality of life is enjoyed by all". This aims to provide an area where the natural environment is protected and improved; where there is opportunity for all residents and future generations to live and work; where respect for the environment and economic success go hand in hand; where there are opportunities for recreation and fulfilment for residents/visitors; and where people work together for shared benefits and to resolve differences.

STAKEHOLDER INVOLVEMENT: A MULTI-METHODOLOGICAL APPROACH TO DETERMINING THE FACTORS THAT AFFECT QUALITY, SATISFACTION, AND IMPACT OF PUBLIC PARTICIPATION IN COASTAL POLICY MAKING

Courtney Tobin, Dionne Hoskins, Sania Compton, and Tyler P. Reinagel

Fanning Institute
University of Georgia
1240 South Lumpkin Street
Athens, Georgia 30602
tpreinag@uga.edu

The research surrounding public input and creating better stakeholder processes is robust, but perceptions and intentions relating to public input processes by both leaders and participants is rarely considered. Coastal regions of the US are particularly critical for study, as coastal resources are limited, interests are diverse, and the implications of policy decisions are significant and permanent. With support from the Georgia Sea Grant program and input from a diverse project advisory committee, this presentation will discuss how this recently completed Sea Grant research project sought to identify and explain perceptions of involvement and explores the connections that these perceptions have with one another and with the outcomes of policy development in Coastal Georgia. If leaders and participants better understand their own strengths and biases as they relate to actions taken prior to or as part of a stakeholder process, are we able to produce better results, or at least results that include greater confidence in the process. The presentation will address three different types of stakeholders – active, expectant and latent – and two types of leaders – top level and mid-management. By analyzing policies including the deepening of the Savannah (GA) harbor; South Atlantic Fisheries Management Council policy; Georgia Marsh Hammocks, Docks, and Marinas policies; and the Coastal Comprehensive Plan, we assessed 1) opinions of processes, 2) values expected and exhibited by both leaders and participants, and 3) particular interests through one-on-one interviews that will indicate perceptions of the entirety of mandated engagement, where the strengths of these processes lie, and where there are opportunities for improvement. Through this three-part, multi-methodological approach, our goal is to develop a framework for Coastal Georgia policy development that will meet the needs of leaders while improving stakeholder involvement as an opportunity for thoughtful and constructive engagement.

THE ROLE OF LAND TRUSTS IN CLIMATE CHANGE ADAPTATION: USING BIODIVERSITY CONSERVATION TO PRESERVE ECOSYSTEM RESILIENCE

Clara Rubin*, Pam Rubinoff, Don Robadue, Joanne Riccitelli, Clark Collins

University of Rhode Island
Department of Marine Affairs
The Coastal Institute
Kingston, Rhode Island 02881
crubincr@gmail.com

As the impacts of climate change increasingly affect coastal regions measures must be taken to support ecosystem resilience and protect vulnerable species and habitats. Land Trusts are uniquely placed in a position of national prominence within conservation networks and have the experience, capacity, and infrastructure necessary to implement climate change mitigation measures on a local, regional, and national scale. Primary goals of the Land Trust include supporting ecosystem health and services by preserving large blocks of undeveloped land, establishing habitat connectivity, and protecting rare species. These management goals can be refined and refocused directly on increasing ecosystems' resilience to climate change. Ecosystems with higher biodiversity are more resilient to climate change and increased environmental pressures, hence preserving biodiversity must be a high priority for conservation organizations such as Land Trusts. Integrated site-specific management of habitats with high biodiversity value has proven to be a successful strategy in conserving biodiversity around the world. Land Trusts have the local knowledge and capacity necessary to implement such management policies and can easily adapt their traditional goals of habitat protection and conservation to focus land acquisitions in areas of high biodiversity value, thus maintaining previous goals while increasing resiliency of managed lands. Sea level rise, changing weather patterns, and increasing storminess are placing mounting pressure on delicate coastal ecosystems and society must take active measures to protect vital ecosystem services. Land Trusts' support of biodiversity conservation can have manifold societal and environmental benefits by increasing ecosystem resilience and protecting valuable ecosystem services and habitats.

WHERE DID MY COASTAL PROPERTY GO: PROVIDING INFORMATION TO POTENTIAL PURCHASERS OF COASTAL PROPERTY

Thomas Ruppert, Esq.
Florida Sea Grant
Bldg. 803, McCarty Drive
PO Box 110400
Gainesville, FL 32611-0400
E-mail: truppert@ufl.edu

Coastal property presents challenges distinct from those of inland property. Even the U.S. Supreme Court has noted this in cases addressing property rights in the coastal context. Nonetheless, many purchasers of coastal property possess little understanding of coastal dynamics, extent of hazards such as storm surge and hurricanes, the challenges of securing insurance, or the many legal limitations on what can and cannot be done on coastal properties.

In other contexts, such as hazards due to fire, earthquakes, floods, termite infestation, or lead, state laws require certain types of disclosure or “notice” to potential property purchasers. Coastal property purchasers could benefit from requirements that they also receive notice of coastal hazards prior to purchase. Three distinct reasons support the possible implementation of similar notice provisions for potential purchasers of coastal properties subject to hazards.

First, fairness counsels giving notice: we commiserate with those that purchase without understanding the risk. Second, economic efficiency: an efficiently functioning free market economy requires that consumers have a reasonable amount of available goods for the consumers to be able to appropriately value the good. Third, providing notice to prospective purchasers may have specific legal impacts that influence the ability of state or local governments to protect people, property, and ecosystems at the land-water interface. This presentation suggests that state or local laws should require such notice and presents examples and best practices for drafting notice requirements to maximize their effectiveness in informing potential purchasers about the limitations and hazards of coastal property.

CONSERVATION PLANNING FOR THE SUBMERGED AREAS OF SAN FRANCISCO BAY

Korie Schaeffer, Marilyn Latta, Brenda Goeden, Natalie Cosentino-Manning, and Caitlin Sweeney

NOAA National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

San Francisco Bay is one of the largest and most important estuaries on the West Coast, both for the habitat it provides for fish and wildlife and for the ecosystem services it offers people. The San Francisco Bay Subtidal Habitat Goals Project is a collaborative, regional planning effort to advance the understanding and science-based protection and restoration of submerged habitats in San Francisco Bay. The project leads from San Francisco Bay Conservation and Development Commission (BCDC), California Ocean Protection Council (OPC)/State Coastal Conservancy (SCC), National Oceanic and Atmospheric Administration (NOAA), and San Francisco Estuary Partnership (SFEP) worked with the scientific community, managers, restoration practitioners, and stakeholders to develop the conservation plan. The Project vision is to achieve, over the next 50 years, a net improvement of the San Francisco Bay's subtidal ecosystem through science-based protection and restoration of habitats. To achieve this improvement, the Subtidal Habitat Goals Project proposes:

- Increasing the quantity of desired but currently limited habitats;
- Emphasizing support of native species;
- Increasing our understanding of the physical and biological processes that affect subtidal habitats and the use of these habitats by species.

The Subtidal Goals Report and website (www.sfbaysubtidal.org) were launched and distributed in January 2011 and are designed to give resource managers, regulatory agencies, environmental groups, researchers, industry, and anyone interested in the Bay the basic information they need to plan conservation, restoration, research, and management activities related to subtidal habitat in San Francisco Bay. Efforts are currently underway to implement this conservation plan.

WORKING WITH THE NATIONAL SEA GRANT SUSTAINABLE COASTAL COMMUNITY DEVELOPMENT NETWORK TO BUILD SUCCESSFUL COMMUNITIES AND ECONOMIES

Lisa Schiavinato*, Vicky Carrasco, Kristen Grant, Joe Lucente

North Carolina Sea Grant College Program
1575 Varsity Drive
Campus Box 8605
NC State University
Raleigh, NC 27695
email: lcschiav@ncsu.edu

Most coastal management professionals have heard about the National Sea Grant College Program. For those along the coast or the Great Lakes, your land grant university has a Sea Grant College Program affiliation. However, what exactly is it? How do Sea Grant extension professionals partner and network with other organizations, and what is the relationship to land grant universities? What tools and resources can we provide to better help prepare all communities to make better decisions about their economic, social and environmental well-being, while helping them create positive community impacts? The Sea Grant Sustainable Coastal Community Development (SCCD) Program focuses its strength through network collaborations at the national, regional and state levels. It is comprised of individuals affiliated with traditional land grant university extension programs that have a wide variety of expertise and specializations. The network utilizes a combination of sharing ideas, cross training, online communications, national and regional meetings and network collaboration to address a myriad of community development issues. Come explore the SCCD Program and its focus on community planning and growth management in coastal areas. This initiative within the National Sea Grant College Program provides services to coastal communities to aid in efforts to protect their environmental amenities, strengthen their economies, and improve their quality of life. The goal is to realize a significant step-up in Sea Grant's engagement at the decision-making level (municipalities, counties, state agencies, watershed management districts) by providing the enhanced science-based support needed to balance environmental, social and economic considerations.

THREE REASONS TO VALUE COASTAL GOODS AND SERVICES

Monica Galligan,* Jason Scorse, and Judith Kildow

Monterey Institute of International Studies
Graduate School of Middlebury College
460 Pierce Street
Monterey, CA 93940

This paper explains the three most important reasons we need to know the “hidden” or non-market values of coastal and ocean goods and services and why policy makers must use them when making decisions: 1. Prices for coastal and ocean resources, absent non-market values, are wrong, and reflect market failures that lead to inefficient and unintended outcomes; 2. We can't get markets for coastal and ocean ecosystem services without proper non-market valuation, but once we do, we can unlock the power of market forces for conservation; and 3. Non-market values contribute significantly to coastal property values and therefore are key to the local tax base. Economists have applied a range of methodologies during the past forty years to capture hidden values of environmental goods and services that fall outside the market system. Until recently, policy makers paid little attention to non-market values, either ignoring or under representing them in key cost-benefit decisions. However, events like the BP Gulf oil spill and extreme events such as hurricanes and tsunamis have highlighted the importance of ecosystem values from the oceans and coasts. Some policy makers now actively seek estimates of non-market values, recognizing the costs of ignoring them in the past. The values attributed to clean, stable beaches for tourism, of unpolluted waters for marine life, and of healthy wetlands and estuaries for shoreline protection, pollution filtration, and fish nurseries have become increasingly apparent. Investments in coastal habitat restoration have returned far more than was spent once a full accounting is performed.

THE USE OF NETWORK-ENABLED TECHNOLOGIES IN FISHERIES MONITORING, CONTROL, AND SURVEILLANCE: A SOCIAL WEB APPROACH

Shah Selbe

Center for Ocean Solutions, Stanford University
2448 ½ S. Centinela Ave
Los Angeles, CA 90064
shah.selbe@gmail.com

One of the main enablers of illegal, unregulated, and unreported (IUU) fishing is the poor collection, handling, and dissemination of information in regards to monitoring and surveillance. Oceans are rich, diverse and complex environments, but human impact from industrial fishing is compromising the health, balance and sustainability of marine environment. In most coastal regions, data management and coordination are weak at best. For example, a recent South Pacific assessment showed that data coordination was the single worst component of the regional surveillance approach. The use of paper databases and silo'ed information systems results in ineffective regional and international data sharing mechanisms. This is a critical concern for those managing our dwindling fish stocks in coastal areas with limited monitoring resources. Much of what is currently collected, particularly in less developed countries, is stored in archaic formats that complicate analysis and verification efforts. This adversely impacts comprehensive management of our fisheries, and limits the ability to create effective metrics and make use of finite enforcement resources. The nearly exponential pace of technology growth facilitates solving these problems. The current approach to monitoring involves technologies that have been implemented independently over time. Through the use of internet-enabled and network-centric technologies, monitoring can extend to an often-untapped local community of fishermen, maritime workers, and conservation organizations. As these input sources expand, there is a strong network effect as additional contributors can improve the overall quality of data collected. Existing and emerging network-based technologies offer solutions enabling fishery managers and other entities to optimize fisheries' data collection, monitoring and enforcement to deter IUU fishing and enhance the health of our oceans.

NOW WHAT? WHY ALL OUR GEEKY TOOLS HAVEN'T SAVED COASTAL COMMUNITIES YET, WHY THEY'RE NOT GOING TO, AND WHY (AND HOW) WE SHOULD KEEP USING THEM ANYWAY.

Wesley Shaw*, John Bowie, Marian Hanisko, Tracie Sempier, Heidi Stiller, Chrissa Waite

Blue Urchin
PO Box 1297
Friday Harbor, WA 98250
wes@blueurchin.com

Every year, all of us working in coastal management get more and better tools to address the challenges of protecting people, property, and natural systems in coastal areas. We get mountains of additional data, more accurate maps, and more powerful computers. We learn about what we shouldn't be doing, and how to do what we are doing better. Yet somehow every year we find that in too many ways our coastal areas aren't doing better. In fact, they're doing worse. What are we doing? And how in the world can we start to turn these trends around? These might once have been rhetorical questions. After all, the only things more complex than coastal systems are the people making the decisions about them. Luckily, thanks to work from sociologists, psychologists, and even neurologists; as our understanding of coastal areas has improved, so has our understanding of *why* people—including coastal decision makers—decide *what* they decide, and how they might be encouraged to make different decisions. Over the past five years, those of us working on the StormSmart Network have been working to merge what we know about coasts with what we know about people, developing everything from simple brochures to advanced web tools, expanding from one small state to a dozen. In this session we'll talk about what's worked, own up to what hasn't, and share what's next in our continued effort to help us move closer to our goals.

PREPARING FOR RISING TIDES: PROVIDING SEA-LEVEL RISE TOOLS AND GUIDANCE TO LOCAL GOVERNMENTS IN WASHINGTON STATE

Kate Skaggs

NOAA Coastal Management Fellow
Shorelands & Environmental Assistance Program
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600
Kate.Skaggs@ecy.wa.gov

In the US Pacific northwest, sea level rise (SLR) projections range from 3” to 22” by 2050 for the Puget Sound, 1” to 18” for the central and southern outer coast, and -5” to 14” for the northwest Olympic Peninsula. This range of uncertainty highlights one of the many difficulties local governments face when planning for the impacts of, not only sea level rise but also more frequent storm events and heightened storm surges when those events occur. The Washington Department of Ecology (Ecology) is assisting local governments by providing them with information, guidance, and tools they will need to effectively plan for and adapt to sea level rise. A survey was distributed to local governments to gauge the level of concern regarding sea level rise, determine what information planners already possess, and establish what SLR information Ecology could provide that would be most helpful. The results of this survey will be used to inform the development of a guidebook. The guidebook will focus on how to integrate sea level rise planning into local Shoreline Master Programs and other already existing regulation in Washington. The survey information will also be used to prepare outreach and education materials for local planners and the public. Additionally, Ecology is coordinating with NGOs, state agencies, and academic institutions to foster regional collaboration concerning SLR adaptation planning. These actions aim at helping local governments be more prepared for SLR impacts and decrease political, economic, and social costs associated with waiting to adapt.

NEW YORK HARBOR SCHOOL OYSTER RESTORATION PROJECT: AN INNOVATIVE PUBLIC-PRIVATE PARTNERSHIP TO IMPLEMENT OYSTER RESTORATION AND PUBLIC EDUCATION IN NEW YORK HARBOR

Tiffany Smythe

New York Harbor Foundation
10 South Street, Slip 7
New York, NY 10004
tcsmythe@my.uri.edu
203.470.5569

The New York Harbor estuary was historically dominated by miles of oyster reefs which surrounded New York City and provided countless ecosystem services in the form of habitat, water filtration, wave attenuation, and a vibrant fishery. While these oysters have largely disappeared, efforts are currently underway to restore oyster populations to the estuary. The New York Harbor School is leading a large-scale initiative to restore one billion live, adult oysters to the harbor. This restoration project is innovative in that it constitutes a partnership between the school, a public maritime theme-based high school; environmental organizations; and city, state and federal government agencies. The project is designed to help resource managers achieve restoration goals for the Harbor, such as those identified in the U.S. Army Corps of Engineers' Hudson River Estuary Comprehensive Restoration Plan; yet it involves a unique array of partners to achieve these objectives. Restoration is being implemented by Harbor School students and teachers as part of the school's science curriculum: students and teachers are planting the oysters, monitoring the reefs, and conducting outreach. This restoration project not only serves an important role in educating a range of stakeholders in the practice of restoration and the ecosystem services provided by oysters; it also provides critical training to New York City students while developing their stewardship ethic. This presentation will offer an overview of this oyster restoration project with an emphasis on the partnership developed to manage this project and the role of students and teachers in implementing this initiative.

USING SOCIAL NETWORK ANALYSIS TO UNDERSTAND COLLABORATIVE COASTAL ECOSYSTEM-BASED MANAGEMENT PLANNING PROCESSES

Tiffany Smythe

Department of Marine Affairs
University of Rhode Island
Kingston, RI 02881
tcsmythe@my.uri.edu

Ecosystem-based management (EBM) is frequently touted as a preferred approach to coastal management, and interdisciplinary and interagency collaboration is often recommended as the best strategy to apply this approach, given the fragmented nature of coastal governance. Despite this, relatively little research has been done as to how coastal management practitioners collaborate across disciplines and jurisdictions to develop coastal EBM plans. Social network analysis is a suite of methods for systematically analyzing and mapping relationships between individuals and organizations, and can be a useful means through which to examine the internal workings of collaboration. This presentation presents the results of a doctoral dissertation analysis of the collaborative processes used in two recent coastal EBM planning initiatives: the Greenwich Bay Special Area Management Plan in Rhode Island and the Great South Bay Ecosystem-Based Management Initiative in New York. Social network analysis methodologies were used to analyze how practitioners in each of these cases collaborated across both jurisdictions and disciplines to develop these plans. Results provide insight into the types of individuals and organizations who were involved in these planning processes; how they worked together; and which individuals were most central and most influential in their respective networks, and reveal significant differences between the two cases. This presentation will conclude with discussion about how to apply study findings and lessons learned in future EBM planning processes.

MEASURING THE MARGINAL VALUE OF A RECREATIONAL FISH WITH BENEFIT TRANSFER META-ANALYSIS

Nicholas M. Sotire*and Paul Hindsley

Environmental Studies & Economics
Eckerd College
4200 54th Avenue South
St. Petersburg, Florida 33711
Phone: 203-912-4403
Email: sotirenm@eckerd.edu

Fisheries allocation decisions are dependent on both biological and economic information. While the biological components of stocks drive policy makers' determinations of total allowable catch, the allocation of fishery harvest among the commercial and recreational sectors depends upon economic components of the fishery. Policy makers can make some allocation decisions based on market information from the commercial sector. Fishery harvest allocations related to the recreational sector depend upon nonmarket valuation techniques which capture the flow of ecosystem services to saltwater anglers. In some situations, obtaining the information necessary to make these resource allocation decisions can be costly and/or time consuming. Benefit transfer methods, which rely on existing information from the economic literature, can help facilitate allocation decisions when individual fishery information is not available. In this study, we perform a benefit transfer meta-analysis in order to derive recreational anglers' marginal value for saltwater fish. This application of meta-analysis uses values derived from studies that have performed the travel cost method. In this study, we estimate a benefit transfer function using 417 values from 38 different studies in the United States. We also discuss the implications of using this type of methodology to drive policy.

COMMUNITY PARTICIPATION IN MARINE RESERVE SCIENCE AND MANAGEMENT: PORT ORFORD, OREGON

Pete Stauffer

Surfrider Foundation
PO Box 550
Port Orford, OR 97465
pstauffer@surfrider.org

In 2009, the State of Oregon designated the Redfish Rocks Marine Reserve and Marine Protected Area as one of two pilot sites of its new marine reserves program. The proposal was developed through a community-based process in Port Orford, Oregon that engaged fishermen and other stakeholders and scientists in determining the goals, location, boundaries, and draft rules. As part of House Bill 3013, the Oregon Legislature mandated that the management plan for Redfish Rocks be developed in collaboration with a local community team. The Redfish Rocks Community Team was formally established in February, 2010 following an open application process. The Team includes a diverse set of members representing local government, commercial fishing, recreational fishing, port, local business, recreation, conservation, watershed council, and science. For the past two years, the Team has been working with the Oregon Department of Fish and Wildlife (ODFW) to develop and implement a management plan for Redfish Rocks that addresses biological and socioeconomic monitoring, education and outreach, and compliance and enforcement. To support its efforts, the Redfish Rocks Community Team created working groups for each of the main topics to be addressed in the management plan. The working groups are comprised of community team members and staff, as well as representatives of ODFW. By promoting collaboration between managers and team members, the working group model is helping to integrate local knowledge and perspective, while also building lasting capacity for implementation.

WEST COAST GOVERNORS' AGREEMENT ON OCEAN HEALTH: THE REGIONAL OCEAN PARTNERSHIP FOR THE WEST COAST

Suzanna Stoike, Todd Hallenbeck, Alison Haupt, Alan Lovewell

Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

The West Coast Governors' Agreement on Ocean Health (WCGA) is a regional collaboration to protect and manage ocean and coastal resources along the entire West Coast. Launched in 2006 by the governors of California, Oregon, and Washington, the partnership advances regional ocean governance to protect and restore the health of West Coast ocean and coastal resources and the economies that depend on them. In 2008, the WCGA released an action plan describing 26 *key actions* to achieve its seven goals, and then formed 10 Action Coordination Teams (ACTs) comprised of agencies, tribal sovereigns, academia, industry, and stakeholders to address ocean issues on the West Coast. In 2011, the WCGA identified four strategic priorities to advance West Coast ocean and coastal health initiatives and provide economic stimulus in the near term:

- Describe the effects of *changing climates* on marine and coastal environments and communities
- Help to ensure *working waterfronts*, which supports healthy, sustainable, and vibrant coastal communities
- Support sustainable, efficient, *marine transportation* initiatives
- Advance understanding of and planning for *renewable ocean energy* alternatives

The WCGA has many accomplishments since 2006, including:

- Sponsoring a West Coast Sea Level Rise Study by the National Research Council to be released spring 2012;
- Developing a marine debris strategy and implementation plan for the West Coast; and
- Contributing to the removal of 90% of *Spartina* infestations from San Francisco Bay, 99% of infestations from Willapa Bay in Washington, and treatment of the only existing population in Oregon.

‘IF YOU KNOW WHAT’S GOOD FOR YOU’: THE NEED FOR ‘SOCIAL MARKETING’ TO SELL NORTH CAROLINA COMMUNITIES ON THE ECOSYSTEM BENEFITS OF ALTERNATIVE ESTUARINE SHORELINE STABILIZATION METHODS

Deanna F. Swain

Coastal Resources Management PhD Program
East Carolina University
Greenville, NC
swaind95@students.ecu.edu

The ecosystem services provided by estuarine shorelines often are lost to property owners’ desire to harden property against erosion. Although research indicates hybrid and soft stabilization methods, including marsh sills and vegetative planting, can provide erosion protection in an ecologically sustainable manner, many property owners and contractors are either unfamiliar with or view them unfavorably. The questions of how to reconcile traditional community perceptions, private property rights, public trust interests, and ecosystem services in shoreline stabilization management presently confronts many coastal states. In North Carolina, several decades of remarkable ease in permitting traditional bulkheads and revetments have contributed to entrenched expectations of what shoreline stabilization should be. The imbalance of permitting requirements between hard and alternative stabilization techniques seems an obvious target for those advocating a shift away from hardened structures. While introducing a preferential hierarchy of stabilization methods into permitting is possible, failure to also address the ingrained social bias against alternative techniques may derail successful implementation of any changes. A ‘social marketing’ campaign explaining the ecosystem services and benefits of alternative techniques may diminish the social desirability of traditional techniques and ease a transition to a new permitting structure. This qualitative research uses interview and survey data of owners, contractors, and agency staff to identify the primary social hurdles to adoption of alternative stabilization. The results are compared with the experiences of Mid-Atlantic states with ‘soft stabilization’ policies. The analysis identifies common hurdles to implementation and key areas for ‘social marketing’ of alternative stabilization techniques.

IMPLEMENTING A HAZARD RESILIENCE TOOL: THE COASTAL COMMUNITY RESILIENCE INDEX

Jody Thompson^{*}, Tracie Sempier, LaDon Swann

Auburn University Marine Extension and Research Center
4170 Commanders Drive
Mobile, Alabama 36615
jody.thompson@auburn.edu

The Coastal Community Resilience Index seeks to increase risk awareness among local communities of their susceptibility to natural hazard events. Developed in partnership with the Gulf of Mexico Alliance, the CRI is delivered through interactive sessions with community decision-makers and facilitated by trained facilitators from Sea Grant Extension, Cooperative Extension, National Estuarine Research Reserves, and other partners. Now in the implementation phase, the CRI will be delivered to at least five communities in the five Gulf of Mexico states, with each community completing the CRI at one-year intervals. Tool effectiveness will be measured through qualitative and quantitative data in the initial three-year implementation and evaluation period. The CRI is a snapshot in time, assisting communities in assessing their natural hazard preparedness and planning. The recipient audience can include floodplain managers, land-use planners, local elected officials, natural resource managers, and emergency managers, and is applicable at the city and county or parish level. The CRI can be coupled with existing training programs as an entrée to introduce other natural hazard planning topics, such as sea level rise and climate change to coastal communities. The end outcome is for communities to take actions to address the weaknesses they identify utilizing the CRI, and community decision-makers that are more informed on their community's level of risk, ultimately increasing their capability of responding to disasters. The CRI development, delivery and adaptation model can be readily transferred to all U.S. coastal communities, and is easily adapted for natural hazards more applicable to inland communities.

CLIMATE-SMART SANCTUARIES: AN INITIATIVE TO HELP NATIONAL MARINE SANCTUARIES AND OTHER PLACE-BASED PROGRAMS ADAPT TO AND MITIGATE FOR CLIMATE CHANGE

Paul C. Ticco

NOAA Office of National Marine Sanctuaries
1305 East West Highway
Building Four
Silver Spring, MD 20910
paul.ticco@noaa.gov

Climate change's impacts on the coastal and marine environment include ocean acidification, warming seawater temperatures, sea level rise, and changes in currents, upwelling and weather patterns. These have the potential to cause fundamental changes in the nature and character of marine and coastal ecosystems; be detrimental to local economies; and worsen existing problems such as pollution, overfishing, habitat destruction, invasive species and disease. Coastal and marine resource managers, particularly those who administrate site-specific protected areas, must identify and respond to climate change impacts as part of comprehensive long-term plans for their site. Place-based protected areas may also serve as natural venues for climate change research and education. To address climate change impacts as part of a larger management strategy NOAA's Office of National Marine Sanctuaries recently launched a Climate-Smart Sanctuary (CSS) initiative to develop climate change scenarios, and to implement a responding climate change action plan for each site. A sanctuary can then be certified as "climate-smart" when it achieves a set of identified standards. At present, this initiative is being piloted in several ONMS sites. A number of important lessons that have already been learned for implementing site-specific climate change action plans will be discussed, as will the use of these plans in other place-based programs.

ASSESSING FLOODING ADAPTATION NEEDS IN THE CITY OF CHARLESTON, S.C.

April L. Turner*, Jessica C. Whitehead, and Robert H. Bacon

S.C. Sea Grant Extension Program
S.C. Sea Grant Consortium
287 Meeting Street
Charleston, SC 29401
April.Turner@scseagrant.org

Charleston, S.C., is vulnerable to flooding from heavy rainfall, storm surges, and astronomical high tides. Accelerated sea level rise and more frequent heavy rainfall events will exacerbate the frequency and depth to which inundation occurs. In 2010, S.C. Sea Grant received funding through a National Sea Grant Coastal Communities Climate Adaptation Initiative to complete a demonstration project using awareness of existing flooding problems as an entry point for community discussions of sea level rise (SLR) and its impacts on municipal infrastructure. Maps were developed to illustrate scenarios of tidal flooding for the Charleston peninsula through 2040 at low and high tide, focusing on SLR scenarios and the locations of structures and critical infrastructure. Using the standard inundation model, the peninsular land and water surfaces were intersected to create flood footprints that could be overlaid with infrastructure to help in planning decisions. City of Charleston stakeholders were engaged throughout the project to ensure the results incorporated decision-makers' perspectives in ways that will culminate into feasible community adaptation planning in the future. A focus group was conducted to gauge community stakeholder perceptions of flooding and SLR, and their preferred methods for accessing information. A key finding was that stormwater infrastructure and flood control measures must be incorporated in SLR maps to be useful for planning. Results from initial project efforts are proving to be an important first step toward catalyzing adaptation planning in a municipality where climate change alone is unlikely to motivate the community to act in the short term.

THE CRI-SC, COMMUNITY RESOURCE INVENTORY ONLINE: A MAPPING RESOURCE FOR SOUTH CAROLINA COMMUNITIES.

April L. Turner* and Samantha M. Bruce

S.C. Sea Grant Extension Program
287 Meeting Street
Charleston, SC 29401
April.Turner@scseagrant.org

In order to effectively plan for a community's future while protecting the quality of the environment, officials need to have detailed knowledge of the resources a community possesses. A Community Resource Inventory (CRI) is the foundation of good planning. A CRI is a list or atlas of the natural and cultural resources, as well as human dimensions data (e.g., land parcels, urban areas, streets and highways) in a community. The CRI-SC tool, developed by the S.C. Nonpoint-Education-for-Municipal-Officials Program, presents a list of resources in the form of online map data, and is intended for quick creation of resource inventory maps. No formal mapping or Geographic Information Systems (GIS) training and capabilities are required. The development of the tool has relied heavily on stakeholder input gathered through surveys and training workshops. The information was used to assist with the identification of data resources for project content; provide input from a local perspective on the development and functionality of the tool based on community needs; and provide data and mapping resources that are relevant and would improve this GIS-based application. The tool can be used to overlay data layers with USGS topo maps, satellite imagery, and street maps. Example data layers include zoning, land cover, watershed boundaries, and water quality (303d) data. In addition, a user guide with instructions for navigating and using the CRI-SC tool and Web site have been created. A public launch introducing the tool to city and county councils, planning commissions, and the appropriate staff is underway.

COMMERCIAL FISHER'S EXPERIENCES, AND PERCEPTIONS TOWARD MARINE DEBRIS IN COASTAL NORTH CAROLINA

Hans Vogelsong* and Chris Ellis

East Carolina University
Institute for Coastal Science and Policy
& Department of Recreation and Leisure Studies
377 Flanagan Building
Greenville, NC 27858
vogelsongh@ecu.edu

Marine debris is an issue that has received much attention in recent years, and is comprised of manmade objects that lie on the bottom of the ocean, are found in the water column, and/or float on the surface of the water. Generally speaking derelict fishing gear can also be considered a form of marine debris. In order to better understand how marine debris impacts water users, and also how these impacts may be decreased, a survey was conducted with commercial fishers in the "Core Banks" region of coastal North Carolina. Survey items focused on where and to what extent fishers encountered marine debris; the impacts that marine debris has on the coastal environment and their fishing; what causes they attribute marine debris to; and suggestions for solutions to lessen both the amount of marine debris present along the coasts, and to minimize negative consequences of marine debris. Data revealed that although commercial fishers frequently encounter both marine debris and derelict gear, they do not consider it to have significant negative environmental or fish harvesting consequences. In fact, a few suggest that it may actually enhance fish habitat by providing additional underwater structure and cover. Although many members of the sample responded that they contribute to marine debris in the region, they attribute the primary source of marine debris to recreational water users. Discussion focuses on solutions to lessen the negative impacts of marine debris that include suggestions for increased enforcement of regulations and education focused on the broad consequences of marine debris.

ENGINEERING WITH NATURE IN THE U.S. ARMY CORPS OF ENGINEERS

Emily A. Vuxton and Todd S. Bridges*
U.S. Army Corps of Engineers Headquarters
441 G Street NW
Washington, DC 20314
Emily.A.Vuxton@usace.army.mil

Engineering With Nature (EWN) is an initiative within the U.S. Army Corps of Engineers to intentionally align natural processes with engineering practices to efficiently and sustainably deliver economic, environmental, and social benefits through collaborative processes. It seeks to use natural processes to deliver desired results, minimizing the environmental footprint of projects and increasing potential benefits. It uses science-based collaborative processes to engage stakeholders, reduce project delays and social friction, and create projects that will be broadly accepted by a wide range of stakeholders. Benefits of projects developed within the U.S. Army Corps of Engineers which utilize EWN's concepts include created wetlands and bird habitat, produced through beneficial use of dredged sediments within the Corps' Navigation program. This presentation will provide an overview of EWN, past and ongoing projects in the U.S. Army Corps of Engineers which embrace EWN's holistic response to project development and execution, as well as opportunities for interested agencies and stakeholders to contribute and participate in the continued development and execution of EWN.

MARINE PROTECTED AREA DESIGN ON CALIFORNIA'S NORTH COAST: A CASE STUDY FOR ACHIEVING BROAD STAKEHOLDER CONSENSUS

Adam Wagschal

H. T. Harvey & Associates
7815 North Palm Avenue
Fresno, CA 93711
awagschal@harveyecology.com

California's Marine Life Protection Act (MLPA) directs the state to redesign California's system of marine protected areas (MPAs). The process of redesigning MPAs (the MLPA Initiative) has been ongoing since 2004 and has been implemented in four regions throughout California, the most recent region being the North Coast Region (<http://www.dfg.ca.gov/mlpa/>). Within each region, MPAs are designed by a stakeholder group with support from planners and a science advisory team. The process is also supported by the use of a web-based spatial decision support system (www.marinemap.org). In each region other than the North Coast Region, stakeholders developed multiple MPA design proposals that represent unique stakeholder interests (e.g., conservation, commercial fisheries or recreational fisheries). The lack of stakeholder consensus in these regions has required the state to determine final MPA designs. However, stakeholders in the North Coast Region reached consensus on a single MPA design. This design was endorsed by commercial and recreational fishing organizations, local and national conservation advocacy groups, shellfish farmers, and sixteen local government agencies. The success developing consensus regarding MPA design can largely be attributed to a locally organized planning effort that paralleled the formal MLPA Initiative process. During this effort, priorities regarding ecosystem services affected by MPAs were discussed within the context of empirically derived socio-economic and ecological information. This is an example of how diverse and often polarized stakeholders can reach consensus regarding otherwise controversial coastal management issues. Lessons learned during this process have applicability towards marine spatial planning efforts in other areas.

WATERFRONT REVITALIZATION AND COASTAL SMART GROWTH: IMPLEMENTING COMMUNITY-BASED INITIATIVES THROUGH THE WATERFRONTS FLORIDA PROGRAM

Kenneth Walker* and Randall Schneider

NOAA/OCRM
1305 East West Hwy Room 10166
Silver Spring MD 20910
phone: 301-563-1157
fax: 301-713-4370
email: Kenneth.walker@noaa.gov

Waterfront revitalization can enhance historic, cultural, and scenic resources, through community based efforts to protect water-dependent uses, enhance public access, and increase community resiliency. Waterfront redevelopment can advance a number of smart growth goals, such as promoting infill development, maintaining a strong sense of place, and fostering walkability. Providing a mix of uses while protecting traditional water-dependent uses, working waterfronts can also lead to a more diverse and sustainable economy. However, redevelopment of waterfront properties poses challenges as well as opportunities. Communities need to consider their vulnerability to natural hazards such as storms and flooding, and the risks from sea level rise, so that revitalization does not make the community more vulnerable to natural disasters.

Through a robust planning process (such as the Waterfronts Florida Program), stakeholders representing varied interests can create a common goal for revitalizing the communities' waterfront while protecting the built and natural environments. This session will: describe the Coastal and Waterfront Smart Growth elements and their application to waterfront revitalization issues; share examples of success from the Working Waterfronts Florida partnership; and highlight local implementation of the San Carlos Island (a Florida Working Waterfronts Community) waterfront revitalization initiative.

COMMUNITY PERCEPTIONS OF TOURISM DEVELOPMENT IN BIEN UNIDO, BOHOL ISLAND, PHILIPPINES

Luritta Whiting* and Christie Patrick

University of Washington
School of Marine and Environmental Affairs
3707 Brooklyn Avenue
Seattle, WA 98105
lwhiting@uw.edu

The Coastal Conservation and Education Foundation (CCE) is working in collaboration with Region 7 municipalities (Cebu, Leyte, Bohol) and various financial donors to improve resource management of the Outer Danajon Bank in the Philippines. One objective of the project is to develop dive tourism in the Outer Bank, with a focus on promoting the municipality of Bien Unido, Bohol. Dive tourism is currently absent from the municipality, despite the mayor's efforts to attract investors and tourists alike. Collaboration between the mayor, CCE, and a private real estate developer established new plans to improve the infrastructure and livelihood of community members in Bien Unido by investing in dive tourism. The local community members have not been consulted regarding these developments. This study describes acceptable levels of social, environmental, and economic change according to those perceptions. A survey in the local language was administered to seven hundred participants, revealing generally positive insights into the theoretical development of tourism throughout all of Region 7. With dominating economic benefits, most respondents did not perceive social or environmental impacts as threats that outweigh the benefits of development. The study included semi-structured interviews with Bien Unido community members to define tourism, explore the local views from increases in tourism, and document specific needs of each smaller administrative unit termed a 'barangay'. Trends from the inductive analysis primarily indicate positive perceptions of dive tourism development with a strong emphasis on desires for increased income and local community employment opportunities. The community members would welcome visitors regardless of most other impacts due to their dependency on foreign investments and financial backing.

RISK COMMUNICATION AND COASTAL CLIMATE CHANGE

Joseph Cone*, Patrick Corcoran, Kirsten Winters, and Stuart Carlton

Oregon Sea Grant
Oregon State University
322 Kerr Administration Building
Corvallis, OR 97331
wintersk@onid.orst.edu

Helping coastal communities prepare for climate change is a vital concern, as they face potentially significant effects of climate variability during this century. While public and private decision makers may want trusted information support on coastal climate, and Sea Grant may be a vehicle for providing that support, important questions remain regarding the factors that influence use of climate information by decision makers. Our project--a NOAA funded partnership of various Sea Grant states including Florida, North Carolina, South Carolina, Maryland, Minnesota, Washington, and Oregon--has sought to develop and facilitate local knowledge-action networks that assist coastal decision makers with decision-relevant information about climate variability and change. Our ongoing work incorporates methodology addressing risk and uncertainty, based on the risk communication model developed by M. Granger Morgan and colleagues (*Risk Communication: A Mental Models Approach* by M. Granger Morgan, B. Fischhoff, A. Bostrom, and C. Atman., 2002). This risk communication method is derived from decision research. The panel representing the SARP partner states will discuss progress toward adapting this particular methodology in real time with real communities. The process of developing expert models, developing interview protocols, conducting mental model interviews, analyzing and using results will be described. We will share the lessons learned in introducing this new procedure to numerous practitioners, the limitations and successes, as well as innovations based on our project's outcomes, which include helping to support decision-makers in increasing resilience in coastal social-ecological systems.

BAY CARETAKERS AND KEEPERS: BISCAYNE BAY REGIONAL RESTORATION COORDINATION TEAM-- A VOICE FOR THE BAY

Theresa Woody*, Dick Frost, Phil Everingham and Pamela Sweeney

DOI Office of Everglades Restoration Initiatives
Florida International University
11200 SW 8th Street
Miami, FL 33199
twoody@sfrestore.org

Biscayne Bay is many things to many people: a playground for 2.1 million residents attracting 10.9 million visitors; home of the “Cruise Ship Capitol of the World,” a vital national and international waterway, and part of the largest ecosystem restoration project in the world. A healthy Biscayne Bay makes good economic sense. Clean air, sparkling waters, sunshine, abundant natural resources- these are the lifeblood of Miami-Dade’s economy. Tourism, recreation, fishing and diving, shipping and marine industries all depend on a thriving Bay.

The Biscayne Bay Regional Restoration Coordination Team (BBRRCT) was formed to implement a Bay Action Plan developed through a collaborative process. This multi-party stakeholder team coordinates the activities of public agencies and non-governmental organizations active in Biscayne Bay. The team provides a forum to discuss the management challenges of this urban waterbed. Balancing public demand for protection, restoration, and access to the resource challenges managers and stakeholders alike.

Current Initiatives for the Bay:

- GMP for Biscayne National Park
- Biscayne Bay Aquatic Preserve Management
- Bay Restoration Projects
- Agricultural Water Issues
- Manatee Management
- Sustainable Communities Initiative

This panel will provide insight on these management activities and discuss the dichotomy of what citizens value about the Bay and mandates of agencies that manage the Bay. The value of continued dialogue among diverse stakeholders will be explored as an example of a Social Approach to Examining our Coasts.

EVALUATION OF COASTAL MANAGEMENT PROGRAMS IN XIAMEN, CHINA

Long Zhou

Office of Policy, Planning and Evaluation
Office of Oceanic and Atmospheric Research
National Oceanic and Atmospheric Administration
1315 East-West Highway, SSMC3 11409
Silver Spring, MD 20910

The evaluation of long-term coastal management programs is an important issue for policy-makers, managers and stakeholders to jointly contemplate. In this paper, we examine the evolving process of coastal governance in Xiamen, China from traditional Chinese sector-oriented management to Integrated Coastal Management with an ecosystem approach. The policy cycle method is used to address the baseline in three generations of governance. The outcomes in each generation are analyzed using the Orders of Outcomes framework that is designed to make the ecosystem-based management (EBM) principles operational by understanding the interaction between sources of governance and coastal ecosystems. The first generation (1949-1994) is characterized by insufficient laws and enforcement, centralized planning and sector management. The implementation of wastewater treatment facilities achieved enabling conditions, behavior change of resource users and some improvement of water quality. The second generation (1994-2000) features expanded point source pollution control, conservation and integrated governance mechanism, which achieved additional outcomes: behavior change of institutions and groups, target conditions met. The third generation of governance goes beyond 2000 and is strengthened by regional collaboration with neighboring municipalities to control non-point source pollution. The study implies that ecosystem-based management is more effective than traditional sector management in fundamentally improving water quality in coastal areas.

RESOURCE MANAGEMENT ON THE TEXAS COAST: FROM OIL AND GAS LEASING TO CMSP

Kate Zultner

Texas Coastal Management Program
Texas General Land Office – Coastal Resources
P.O. Box 12873
Austin, Texas 78711-2873
Kate.Zultner@glo.texas.gov

Texas's economy is highly intertwined with its natural resource base, including oil and gas deposits, commercial and recreational fisheries, and waterways for ports and waterborne commerce. Use conflicts are not something new to Texas and the Gulf of Mexico. The creation of Resource Management Codes (RMCs) in the 1980's, provide development guidelines for oil and gas leasing while enhancing protection of Texas's sensitive natural resources. The RMC's provide recommendations for minimizing adverse impacts from mineral exploration and development activities in the state's submerged lands and 10.3 miles out into the Gulf of Mexico. The Texas coast and adjoining waters are experiencing a growing number of important and often competing activities such as maritime transportation, oil and gas drilling, development of offshore and coastal renewable energy, and waste disposal. These conflicting uses extend into recreational and conservation activities. While general planning and mapping of coastal areas for a variety of purposes has been conducted in Texas, it has been acknowledged that a more integrated and comprehensive approach to planning, managing, and preventing conflict within the state's coastal and marine areas is needed which has lead to the development of a coastal and marine spatial planning effort in Texas. Texas will use its experience in oil and gas leasing as it embarks on a developing a comprehensive long-term plan for sustainable use of its coast along with a geodatabase and visualization tool for RMCs and coast-wide planning.