



Lee L. Weishar, Ph.D., M.S., B.S., P.W.S
Senior Scientist/Coastal Engineer

Expertise

Dr. Lee Weishar has more than 30 years of experience in the fields of oceanography, coastal engineering, sediment transport, and nearshore processes. For the past 15 years, he has focused on developing resilient shoreline projects. These projects include developing soft engineering solutions to mitigate shoreline erosion such as sand filled tubes, coir bio-logs, beach nourishment, and other technologies that work with nature, mitigate erosion while allowing the shoreline respond to storms and hurricanes. He also has worked to develop fringe marsh projects to increase resiliency while stabilizing the shoreline. Dr. Weishar's projects also include the design, permitting, and construction oversight of beach nourishment projects that increase shoreline resiliency by allowing the shoreline to respond naturally to incident storms. These efforts promote living shorelines that will be more resistant to the effects of sea level rise and the projected increased storm activity that the east coast is projected to experience over the next decade.

Dr. Weishar also develops wetland restoration projects that specialize in the integration of biological, ecological, and hydraulic data to develop wetland restoration designs that allow Ecological Engineering to be successful and helps ensure that the project will meet the restoration objectives.

Scientific consulting in marsh ecology and the tidal hydraulics of wetlands. Salt marsh restoration as mitigation for power plant intake impacts (e.g., 316(b) restoration measures), and NRDA. Engineering consulting on the effects of tidal inlet and shore protection structures, longshore sediment transport, shoreline response, marsh hydrology and restoration. Conducted numerical model studies of channel stability, shoaling, and tidal flushing at tidal inlets. Designed field studies and performed numerical and physical modeling of waves, currents, water levels, and suspended sediment transport at tidal inlets. Field collection of oceanographic and geotechnical data. Designed and supervised several large beach nourishment projects requiring dune and beach design, construction oversight, and field monitoring.

Education

- Ph.D., Physical Oceanography – 1982, Purdue University
- M.S., Geophysical Oceanography – 1976, Virginia Institute of Marine Science and College of William and Mary
- B.S., Mechanical Engineering – 1972, Michigan State Univ.

Licenses and Registrations

- Professional Wetlands Scientist (PWS) 2005

Publications and Presentations:

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Work Experience

- 1989-Present Woods Hole Group, Inc.
- 1983-1989 U.S. Army Corps of Engineers
- 1973-1982 Purdue University (Research Coordinator, Research Fellow, Research Instructor)
- 1972-1973 F.W. Amend Company
- 1969-1972 Michigan State University (Research Assistant)

Qualification Summary

- More than 30 years of experience in the fields of oceanography, coastal engineering, sediment transport, and nearshore processes
- Salt marsh restoration, planning, design, monitoring/adaptive management
- Ecological engineering for salt marsh/wetland habitat restoration
- Specification of hydrodynamic regimes suitable for salt marsh restoration, including increased salt water flows balanced with fresh and storm water inputs
- Specializes in developing and implementing complex data collection efforts, which require solving detailed and often-diverse logistic problems such as marsh restoration and sediment transport projects in MA, DE, NC, VA, FL, AL, NY, and Caribbean
- Excellent project management skills. Excels at managing large projects with multi-discipline investigators
- Managed projects which designed and completed investigations to determine the optimum offshore sand borrow site locations, which maximize grain size, and quantities of borrow material while minimizing project environmental impacts
- Managed and completed longshore sediment transport and examined shoreline response at numerous tidal inlets along the eastern coast of the U.S. Designed and completed large-scale field investigations to examine wave interaction on ebb and flood tidal shoals

Professional Affiliations

Sigma Xi
American Association for the Advancement of Science
American Geophysical Union
Society of Economic Paleontologists and Mineralogists
American Society of Civil Engineers – Coastal Oceans, Ports & Rivers Institute
Society of Wetland Scientist
Estuarine Research Federation
ASCE Wetlands & Sediment Management Committee
Chairman of ASCE Wetlands Engineering Guidelines Subcommittee
Certified as Professional Wetlands Scientist
American Shore & Beach Preservation Association – Secretary & Board Member
Coastal Zone Foundation – President
Department of Homeland Security Coastal Resiliency Advisory Board Member
Stevens Institute of Technology, Davidson Laboratory Advisory Board Member

Key Projects

Ninigret Pond Salt Marsh Restoration, Charlestown, RI

The Ninigret Pond restoration project is a thin layer deposition project designed to aid the Ninigret Pond marshes become more resilient by helping the marshes respond to the future effects of sea level rise. Dr. Weishar was the professional wetlands scientist for this project and served as the Woods Hole Group's project manager. The Woods Hole Group established the tidal datums for the Ninigret Pond estuary using data the Woods Hole Group had obtained for the Rhode Island Regional Sediment Management Project. These data were used to establish target elevations for the restoration of both high and low marsh. Additionally, the Woods Hole Group using a combination of GIS, LiDAR, and elevation data obtained with an RTK system within the marsh complex made recommendations for depth of fill and location of fill for the marsh restoration. This process established marsh diversity and allowed the project engineers to maximize the use and placement of dredged sediment on the marsh. The Woods Hole Group aided the agencies in formulating data collection, the location of reference marshes and the establishment of restoration goals and objectives. The goals and objectives were used to establish an adaptive management plan to monitor the restoration and to establish methodologies to determine if the marsh is restoring according to plan.

Comprehensive Plan for Docks, North Haven, NY, Coastal Scientist

Conducted field reconnaissance to characterize existing docks, public access, shoreline aesthetics and nearshore habitat. Wrote a Comprehensive Plan for Docks in North Haven, which highlighted existing dock policies, detailed the potential dock impacts on public access, aesthetics, water quality, and nearshore habitat, and documented the physical environment present along the coast of North Haven, including wave heights and flood elevations during storm conditions. Provided a series of recommendations for the Village to consider when approving new dock regulations. Attended a Village Meeting where the plan was presented to the public, approved and adopted by the Village.

Dredge Disposal Analysis, Chatham, MA, Coastal Scientist

Developed selection criteria to choose areas that are best suited for disposal of dredge material. Calculated fill capacity and designed potential nourishment templates for 14 potential disposal sites in Chatham, Harwich and Orleans. Potential dredge disposal site rankings were based on physical logistics (i.e. location, volume, equipment access, etc.), as well as each site's potential benefits (i.e. erosion protection, habitat restoration, coastal resiliency, etc.) and potential permitting and regulatory constraints (i.e. shellfish resources, presence of salt marsh or eelgrass, etc.). Compiled final rankings, analyses, maps, and fill cross-sections into a final report for the Town.

Monitoring Marsh Restoration in Delaware River Estuary, Public Service Electric and Gas Company

Dr. Weishar is the adaptive management evaluation team leader responsible for an ongoing project evaluating restoration plans, developing and implementing corrective mitigation strategies, required to insure the successful restoration of 20,000 acres of salt marsh in the Delaware River Estuary. As head of the adaptive management team Dr. Weishar assists the client in evaluating the restoration goals, objectives, and restoration timeline as outlined in the adaptive management plan. This project requires evaluation and dissemination of complex data to the public regulatory community and scientists to evaluate the performance of the project.

Key Projects (continued)

USACE IDIQ Task Order Contract – Program Manager

Dr. Weishar was the program manager for a 5-million dollar US Army Corps of Engineers IDIQ task order contract with the US Army Corps of Engineers District New England. During the life of this contract, Dr. Weishar was responsible for all aspects of the contract. He performed as program manager, project manager, and acted as the liaison with the District personnel. As program manager, Dr. Weishar's responsibilities included providing assistance to the Woods Hole Group project managers in developing contract cost estimates that provided a good value the USACE. Dr. Weishar also provided technical oversight for the projects and made sure the reports generated for the USACE. Occasionally the USACE would have a time sensitive project that just had to be completed. When this occurred, Dr. Weishar worked with both the USACE and the WHG project managers to expedite the project so that the time constraints were met without compromising the quality of the work product. As project manager on selected projects, Dr. Weishar worked helped generate Health and Safety Plans for many of the projects. Through his efforts, the IDIQ contract provided high quality products that helped the USACE complete its mission.

Evaluation of Wetland Remediation Techniques in an Arid Environment - Project Manager

Dr. Weishar was the project manager for this large remediation project and led the remediation efforts within the Kingdom of Saudi Arabia. This field study extends along the 750 Km of the Kingdom of Saudi Arabia Arabian Gulf shore from the Kuwait border to the industrial city of Al-Jubail. This complex shoreline is composed of an interlaced series of tide flats, beaches, embayments, lagoons, and salt marshes. Much of these ecosystems remain severely impacted from the oil spill. The year-long remediation demonstration project tested remediation technologies at the field scale for these arid ecosystems. The project demonstrated that large-scale marsh restoration was feasible through construction of a marsh remediation project. The project also demonstrated restoration of the other affected biotypes was feasible using indigenous equipment.

Restoration of a Restricted Tidal Marsh: South Cape Beach, MA. - Project Manager

South Cape Beach is a high marsh that has been isolated from the tidal source waters by culverts and artificial ditches. The installation of the ditches has muted the tidal range on the marsh plain and as a result *Phragmites* has begun to invade the marsh from the upland fringes. Dr. Weishar led the numerical modeling of the effort that formed the foundation for deriving marsh restoration designs that will help restore tidal circulation and prevent *Phragmites* encroachment onto the marsh plain.

Restoration of a Restricted Tidal Marsh: Nonquitt, MA. - Project Manager

Dr. Weishar was the project manager for this project and worked with the Woods Hole group team to develop restoration design alternatives. Nonquitt marsh has been isolated from tidal source waters of Buzzards Bay from approximately 40 years. The isolated pipe leading to the Bay mutes the tidal range from several feet to several inches. As a result the marsh sediments are highly saturated and a fresh water upland community has developed around the marsh perimeter. The preferred restoration alternative incorporated establishing a new tidal inlet in its historical footprint. Restoration design alternatives addressed large-scale marsh plain erosion, impacts to the adjacent wetlands, and increased flooding potential.

Marsh Restoration and Estuary Enhancement in Southern New Jersey, Hancock's Bridge, NJ, Public Service Electric and Gas Company - Oceanographer/Project Manager

As part of permit-required mitigation for nuclear facility with a once-through cooling system, Dr. Weishar reviewed feasibility of a program to restore 10,000 acres of degraded salt marshes through

Key Projects (continued)

on-site visits and analytical analyses. Performed critical investigation using hydraulic modeling, resource area evaluations, design review of marsh channel and tidal inlet design, and investigation and quantification of restoration effects on ground water, septic systems, and private drinking wells. The success of this project required close interaction between Woods Hole Group, Inc., NJ State environmental agencies, NJ Attorney General's Office, National Fish and Wildlife, US Army Corps of Engineers, National Marine Fisheries, and concerned citizens.

Beach Nourishment Design for Spectacle Island Massachusetts, Boston Harbor, MA, Massachusetts Water Resources Authority - Oceanographer/Project Manager

Completed a detailed beach nourishment design for the shorelines of Spectacle Island. Used refraction/diffraction model, REF/DIF1, to predict transformation of waves in areas where the bathymetry was irregular and diffraction was important. Used wave height results as input to longshore and cross-shore sediment transport models. These models were employed to simulate the performance of several different beach fill designs.

Design and Environmental Permitting for Pier and Dock Reconstruction at US Coast Guard Facility, Provincetown, MA, United States Coast Guard - Oceanographer/Project Manager

Performed coastal engineering analysis for the redesign and rehabilitation of a pier and dock facility and wave barrier for the US Coast Guard Station. Calculated design wave criteria for average and storm-induced conditions.

Beach Nourishment Design and Monitoring for the Southern Shore of Cape Cod, Cape Cod, MA, Great Island, Long Beach, and Dead Neck Homeowners Associations - Oceanographer/Project Manager

Performed shoreline change studies to evaluate rate of erosion and sediment loss for three different sites. Designed and participated in collection of high-resolution bathymetry, vibra cores, beach profiles, and sediment grain size data at each site. Developed and implemented beach nourishment plans for each site. Performed on-site topographic and bathymetric surveying before and after nourishment projects.

Environmental Impact Report (EIR) for Shore Protection Structures Between Aunt Lydia's Cove and Morris Island, Chatham, MA, Town of Chatham - Oceanographer/Project Manager

Prepared EIR to address impacts of revetments and other shore protection structures built to protect the Chatham mainland following the formation of the new inlet through the Nauset barrier, January 1987. Analyzed geologic history of the area, and studied evolution of Nauset barrier and tidal inlet system using historical maps, charts, and aerial photographs. Used a combination of existing studies and numerical analysis to quantify wave, tidal, storm surge and sediment transport processes. Prepared a plan of short-term action, long-term action, and short-term optional management alternatives for the Town of Chatham, property owners, and permitting agencies.

Numerical Model Analysis of Wave Climatology and Storm Surge for Seawall Design, Deer Island, MA, Massachusetts Water Resources Authority via Metcalf and Eddy, Inc. - Oceanography/Project Manager

Conducted numerical and physical model analyses of wave climatology, storm water levels, and wave run-up so that an effective and cost efficient shore protection plan could be developed for the island. Results from models runs were used to predict nearshore wave heights and water levels for 5-, 10-, 25-, 50-, and 100-year storm events and to optimize seawall design specifications. Two-

Key Projects (continued)

dimensional physical modeling of the seawall design was performed using a test facility to evaluate the proposed structural design.

Bathymetric and Side Scan Surveys of Fort Point Channel, Boston Harbor, MA, BSC Group, Oceanographer/Project Manager

Performed bathymetric and side scan sonar survey for part of the Central Artery/Tunnel Project. Bathymetry was plotted on the area basemap to ensure water depths were adequate for floating construction barges into the channel. Side scan data were reviewed for possible bottom debris or hazards. During the survey, field operations were restricted due to bridges crossing the channel, and barge and boat activity within the channel. Despite the navigational problems, full coverage of the channel was obtained.

Directional Wave and Current Meter Installation and Data Analysis, Townsend and Absecon Inlets, NJ, Offshore & Coastal Technologies, Inc. - Oceanographer/Project Manager

Collected wave and current data at the entrances to and nearshore region downdrift of the Townsend and Absecon inlets. Analyzed data for directional spectral parameters including significant wave height, wave direction, mean water depth, and the variance of water surface elevation.

Particle Tracking Analysis at the Salem Nuclear Generating Station, Hancock's Bridge, NJ, Public Service Electric and Gas Company - Oceanographer/Project Manager

Evaluated near- and far-field impacts to a nuclear generating station's intake basin using a particle tracking numerical model. Identified portions of the estuary providing potential detritus sources to the intake basin and evaluated the migration of detritus cleaned from the intake screens and dumped back into the estuary. Results of the particle tracking were collected in an effort to design a program to reduce and eliminate the detritus problem.

Bathymetry, Geophysical Survey, and Wave Refraction Analysis for Sand Borrow Site Analysis, Siasconset, MA, Town of Nantucket - Oceanographer/Project Manager

Completed a reconnaissance survey and analysis of two offshore sand borrow sites for a proposed beach nourishment project. Collected regional bathymetry, coring, beach sediment sampling, side-scan sonar, sub-bottom profiling, and magnetometer surveys. Modeled the wave climatology using collected data. Used model results to calculate sediment transport potentials and gradients in sediment transport to determine dredging from the proposed borrow sites.

Sub-bottom Investigations and Detrital Flux Analysis at the Salem and Hope Creek Nuclear Power Plant, Hancock's Bridge, NJ, Public Service Electric and Gas Company - Oceanographer/Project Manager

Designed a phased field data collection program to evaluate potential causes of detrital loading at the Salem and Hope Creek Nuclear Power Plant after detrital loading had forced the operating plant to shut down. Collected bathymetric data, conducted a sub-bottom survey, and monitored physical conditions: temperature, conductivity and current profile at the power plant. Conducted additional surveys to the north and south of the power plant to identify potential sources of the detritus.

Data Collection and Analysis of Tidal Current Characteristics at St. Lucie Inlet and Adjacent Waterways, Martin County, FL, Coastal Technologies Corporation - Oceanographer/Project Manager

Designed a survey to obtain high-resolution measurements of tidal current velocities and to map temporal variations in the spatial structure of flow through the Inlet and waterway cross sections.

Key Projects (continued)

Calibrated a numerical model of Inlet dynamics using survey results. Quantified the effect of Inlet geometry on the spatial structure of tidal flow and explained sediment accretion/scour characteristics within the Inlet.

Publications and Presentations

- Weishar, L.L. 2015. Why Does the Definition of Resilient Coasts and Living Shorelines Vary Regionally? American Shore and Beach Preservation Association Fall National Conference. 14-16 October 2015. New Orleans, LA.
- Weishar, L.L. and E. Leduc. 2015. Can Coastal Resilient Shore Protection Projects and Nearshore Wetland Resources Co-Exist Within a Rapidly Changing Estuary? Society of Wetland Scientists 2015 Annual Meeting. May 31-June 4, 2015. Providence, RI.
- Weishar, L.L. 2015. Is Coastal Resiliency New Buzzword for Estuary and Coastal Restoration Best Management Practices. (Poster). Coastal and Estuarine Research Federation National Conference. 8-12 November 2015. Portland, OR.
- Weishar, L.L. and E. Leduc. 2014. Identifying Viable Beach Nourishment Sites on Sediment Starved Within an Estuary with Rapidly Developing Wetland Resources. American Shore & Beach Preservation Association, 2014 National Conference 15-17 October 2014. Virginia Beach, VA.
- Weishar, L.L. and J.M. Teal. 2014. The Effect of Rapidly Changing Hydrology on Sheet Flow on a Marsh Restoration Project. Restore Americas Estuaries, 7th National Summit, 1-6 November 2014. National Harbor, MD.
- Weishar, L.L. and J.M. Teal. 2014. A Novel Approach to Encouraging Sedimentation in a Large Scale Marsh Restoration Project. Society of Wetland Scientists. 18-23 May 2014. Portland, OR.
- Weishar, L.L. 2013. Can a Fringe Marsh and Eelgrass System Survive Changing Hydraulic and Anthropogenic Impacts without Intervention. Coastal and Estuarine Research Federation's 22nd Biannual Conference. 3-7 November 2013, San Diego, CA.
- Weishar, L.L. 2013. Beach Nourishment and Wetlands Resources, A balancing Act. American Shore & Beach Preservation Association 2013 National Conference. 22-25 October 2013. South Padre Island, TX.
- Weishar, L.L., J. Teal, K. Phillip, R. Hinkle, K. Strait, and B. Evans. 2013. The Impact of Physical Processes on Channel Development and Marsh Plain Vegetation. 2013 Annual Meeting of the Society of Wetland Scientists. 2-6 June 2013, Duluth, MN.
- Weishar, L.L., J. Teal, K. Phillip, R. Hinkle., K. Strait, and B. Evans. 2013. Large-Scale Wetlands Restoration: The Impacts of Physical Processes. Ecological Engineering. The Journal of Ecosystem Restoration. Submitted for Publication.
- Teal, J.M. and L.L. Weishar. 2013. Evolution of Salt Marsh Creek Bank Slopes after Removal of *Phragmites Australis*. Ecological Engineering, The Journal of Ecosystem Restoration. Submitted for Publication.

Publications and Presentations (continued)

- Weishar, L.L. 2012. Stakeholder Interaction in Restoration Designs: Do the Positives Outweigh the Negatives. Restore Americas Estuaries. 20-25 October 2012. Tampa, FL.
- Weishar, L.L. 2012. The Role of Coastal Processes and Shoreline Geomorphology in the Design of Two Small Coastal Bank Restoration Projects. American Shore & Beach Preservation Association 2012 National conference. 10-12 October 2012. San Diego, CA.
- Weishar, L.L., J. Teal, K. Phillip, P. Hinkle, K. Strait, B. Evans. 2012. Large-Scale Wetlands Restoration: The Impacts of Physical Processes. EcoSummit 2012, 4th International Ecosumit, Ecological Sustainability, Restoring the Planets Ecosystem Services. 30 September-5 October 2012. Columbus, OH.
- Weishar, L.L. 2012. The Design for the Restoration of a Freshwater Cranberry Bog in New England. 9th Intecol International Wetlands Conference. 3-8 June 2012. Orlando, FL.
- Weishar, L.L. 2011. A Case Study in Sea Level Rise, Can Private Property Owners Protect Their Property Against Rising Tide Levels Without Hard Engineering Solutions. 21st Coastal and Estuarine Research Federation National Conference. 6-10 November 2011. Daytona Beach, FL.
- Weishar, L.L., T. Herrington, N. Elko, and T. Roberts. 2011. What is the State of U.S. Coastal Engineering & Science? American Shore & Beach Preservation Association. 2011 National Conference. 18-21 October 2011. New Orleans, LA.
- Simmons, H. and L.L. Weishar. 2011. What is the State of U.S. Coastal Engineering & Science? 88th Coastal Engineering Research Board. 26-28 July 2011. Buffalo, N.Y.
- Weishar, L.L., T. Keon, and Peter Markunas. 2011. Regional Sediment Management Combined with an Ecosystem Restoration Project in Chatham, MA; A Local Approach. Coastal Sediment 2-6 May 2011. Miami, FL pp. 2088-2101.
- Weishar, L.L. and J.M. Teal. 2010. Build It and They Will Come. Why Wetlands Form is Important in Restoring Wetlands. 6th National Conference on Coastal and Estuarine Habitat Restoration. 13-17 November. Galveston, TX.
- Weishar, L.L. and P. Markunas. 2010. Direct and indirect Impacts of the Formation of a New Inlet through Nauset Barrier Beach on Municipal and Private Properties. American Shore & Beach Preservation 2010 National Conference. 12-15 October 2010. Charleston, S.C.
- Weishar, L.L. and P. Markunas. 2010. Should Restoration of a Small Estuarine Tidal Inlet and Wetlands System be Permitted. Society of Wetland Scientists, 2010 Annual Conference. 27 June-2 July 2010. Salt Lake City, UT.
- Weishar, L.L. and P. Markunas. 2009. When Sound Coastal Engineering and Wetlands Protections Regulations Collide. Coastal and Estuarine Research Federation National Conference. 1-5 November 2009. Portland, OR.

Publications and Presentations (continued)

- Weishar, L.L. and J.M. Teal. 2009. Wetland Form vs. Function: Can We Incorporate Function into Wetland Success Criteria Without Killing Projects? 13-16 October 2009. St. Petersburg, FL.
- Weishar, L.L. and P. Markunas. 2009. Soft Engineering Solutions for Bank Stabilization; Do They Exist? Northeast Shore & Beach Preservation Association, Northeast Beaches Conference. 21-23 September 2009. Woods Hole, MA.
- Weishar, L.L. 2008. Can Ecological Engineering be Used to Restore Oil Contaminated Salt Marshes and Sand Beaches on Saudi Arabia's Arabian Gulf Coast. 16-20 November 2008. Tampa, FL.
- Weishar, L.L. 2008. Ecosystem and Anthropogenic Effects Associated with the Formation of a New Inlet in Nauset Barrier Beach, Chatham, MA. 35th Annual Conference on Ecosystem Restoration and Creation. 6-7 November 2008. Plant City, FL.
- Weishar, L.L. 2008. Developing Guidelines for Restoring Wetlands; an ASCE Perspective. Restore Americas Estuaries, 4th National on Coastal and Estuarine Habitat Restoration. 13-15 October 2008. Providence, R.I.
- Weishar, L.L. 2008. The Ecological and Sociological Impacts Associated with the Formation of a New Inlet in Nauset Barrier Beach. 2008 Annual Conference of the Society of Wetland Scientists. 26-30 May 2008, Washington, DC.
- Weishar, L.L. 2008. Guidelines for Designing Wetlands. 9th Annual Coastal Inlets Research Program, Technology Transfer Workshop. 28-29 January 2008, Sarasota, FL.
- Weishar, L.L., I. Watt, D. Jones, and D. Aubrey. 2008. Evaluation of Arid Salt Marsh Restoration Techniques. Protecting the Gulf's Marine Ecosystem from Pollution. Hans-Jorg Barth ed. Birkäuser /Springer, pp. 273-279.
- Jones, D. M. Hayes, F. Krupp, G. Sabatini, I. Watt and L. Weishar. 2008. The Impact of the Gulf War (1990-91) Oil Release Upon Intertidal Gulf Coastline of Saudi Arabia and Subsequent Recovery. Hans-Jorg Barth ed. Birkäuser/Springer, pp. 237-254.
- Peterson, Susan, J.M. Teal and L.L. Weishar. 2007. Natural Attenuation of Nitrogen in Wetlands and Waterbodies. Estuarine Research Federation 2007. Science and Management Observations/Syntheses/Solutions. 4-8 November 2007, Providence, RI.
- Teal, J.M. and L.L. Weishar. 2007. We Have Had an Effect. Estuarine Research Federation 2007. Science and Management Observations/Syntheses/Solutions. 4-8 November 2007, Providence, RI.
- Weishar, L.L. 2007. Developing Restoration Alternatives for a Small Degraded Marsh System - Trying to Please Everyone. 34th Annual Conference on Ecosystem Restoration and Creation. 1-2 November 2007, Plant City, FL.
- Weishar, L.L. and J. M. Teal. 2007. The Role of Vegetation in Developing Creek Bank Morphology within Wetlands. 2007 SWS International Conference. Water, Wetlands, and Wildlife – Resolving Conflicts and Restoring Habitat, 10-15 June 2007, Sacramento, CA.

Publications and Presentations (continued)

- Weishar L. T. Keon, and D. Stauble. 2007. Effects of Large Scale Morphological Changes to a Back-Bay System. Proceedings Coastal Sediments 2007, 13-17 May 2007, New Orleans, LA. American Society of Civil Engineers, pp. 814-827.
- Weishar, L.L. and J.M. Teal. 2006. The Engineering Approach and Challenges to the Delaware Bay Restorations. 3rd National Conference on Coastal and Estuarine Habitat Restoration. 9-13 December 2006.
- Weishar, L.L. and J.M. Teal. 2006. Ecosystem Biological Feedback Mechanisms Within Wetlands Restoration Projects: Implications to Success Criteria. 33rd Conference on Ecosystem Restoration and Creation. 2-3 November 2007, Tampa, FL.
- Weishar L.L. and J.M. Teal. 2006. The Development of Creek Bank Morphology Within a Restored Marsh. American Shore and Beach National Conference. 9-11 October 2006, Longbranch, NJ.
- Weishar, L.L. and K.F. Bosma. 2006. Numerical Models, A Tool for Balancing Regulatory and Stakeholder Concerns in the Restoration of Degraded Wetland Systems. Proceedings 30th International Conference on Coastal Engineering. 3-8 September 2006, San Diego, CA. World Scientific, pp. 2182-2193.
- Weishar, L.L., D. Jones, D. Aubrey and I. Watt. 2006. The Restoration of Oil Degraded Salt Marsh and Sand Beaches Within Saudi Arabia. The State of the Gulf Ecosystem: Future and Threats. 5-9 March 2006, Dubai, UAE.
- Weishar, L.L. and K.F. Bosma. 2005. Developing Design Alternatives for the Restoration of A Degraded Marsh System. 32nd Annual Conference on Ecosystems Restoration and Creation. 27-28 October 2005, Tampa, FL.
- Weishar, L.L., J.M. Teal, R. Hinkle, K. Strait and B. Evans. 2005. Embracing Change in the Wetlands Restoration Process Without Compromising Restoration Goals. 18th Biennial Conference of the Est. Res. Feder. 16-21 October 2005, Norfolk, VA.
- Weishar L.L., I. Watt. 2005. Restoration of Oil Contaminated Sand Beaches and Salt Marshes on Saudi Arabia's Arabian Gulf Coast. 2005 Annual Conference, American Shore & Beach Association. 10-12 October, San Francisco, CA.
- Weishar, L.L., I. Watt, and D. Jones. 2005. A Pilot Marsh Restoration Project in Arid climates. Society of Wetland Scientist 26th Annual International Meeting, Charleston, N.C. 6-10 June 2005.
- Weishar, L.L., J. M. Teal, and R. Hinkle. 2005. Designing Large-Scale Wetland Restoration for Delaware Bay. J. Ecological Engineering, Vol. 25, Issue 3, pp 231-239.
- Weishar, L.L., J. M. Teal, and R. Hinkle. 2005. Stream Order Analysis in Marsh Restoration on Delaware Bay. J. Ecological Engineering, Vol. 25, Issue 3, pp 252-259
- Teal, J.M. and L. Weishar. 2005. Ecological Engineering, Adaptive Management, and Restoration Management In Delaware Bay Salt Marsh Restoration. J. Ecological Engineering, Vol. 25, Issue 3, pp 304-314.

Publications and Presentations (continued)

- Weishar, L.L., J.M. Teal, and R. Hinkle. 2004. Ecosystem Feedback Mechanisms within a Wetlands Restoration Project and their Relation to Project Success. 25th Annual Meeting, Soc. Wetland Scientist, Seattle, WA.
- Weishar, L.L., K. Bosma, and J.M. Teal. 2004. The Relationship Between Hydrodynamic Models and Adaptive Management in Marsh Restoration. First National Conference on Ecosystem Restoration. 6-10 December 2004, Orlando, FL.
- Weishar, L.L. and I. Watt. 2004. Evaluation of Arid Salt Marsh Restoration Techniques. 31st Annual Conference on Ecosystems Restoration and Creation. 28-29 October 2004, Tampa, FL.
- Weishar, L.L. and K. Bosma. 2004. Restoration of a Degraded Marsh System Located Behind a Barrier Island. America's Shoreline: Beach and Ecosystem Restoration in the 21st Century. 2004 American Shore & Beach Annual Conference. 13-15 September 2004, New Orleans, LA.
- Weishar, L.L., J.M. Teal, and R. Hinkle. 2003. Channel Formation Process in Restored Salt Marshes. 17th Biannual Conf., Estuary Research Found, Seattle, WA.
- Weishar, L.L., J.M. Teal, and R. Hinkle. 2003. Tidal Channel Development in Two Salt Marsh Restoration Projects. 24th Annual Meeting, Soc. Wetland Scientist, New Orleans, LA.
- Teal, J.M., L.W. Weishar, and R. Hinkle. 2003. *Phragmites* Control with Reduced Herbicide Use. 24th Annual Meeting, Soc. Wetland Scientist. New Orleans, LA.
- Allen, S., P. Fairbairn, and L. Weishar. 2003. Preserving the Salinity Gradient during restoration of a Coastal Wetland on Cape Cod. Restore America's Estuaries, Baltimore, MD.
- Weishar, L., J. Teal, and R. Hinkle. 2002. Methods for Assessing Success in the Early Stages of a Wetlands Restoration Project. 29th Annual Conference on Ecosystems Restoration and Creation. 9-10 May 2002, Tampa, FL.
- Weishar, Lee and Leslie Fields. 2002. Bioengineering for Coastal Bank Stabilization: Case Studies. Proceedings of a Workshop held at the Woods Hole Oceanographic Institution, Woods Hole, MA.
- Fairbairn, P.W., S.D. Allen, L.L. Weishar, and S. Block. 2002. Preserving Salinity Gradients During Restoration of a Coastal Wetland on Cape Cod. Society of Wetland Scientists New England Chapter, Conference, Worcester, MA.
- Weishar, L., K. Bosma, B. Hamilton, S. Jachec, S. Allen, and P. Fairbairn. 2002. Restoration of Tidal Flows to Increase Biodiversity of Coastal Habitats. 5th Annual Conference of the Northeast Shore and Beach Preservation Association. 23-26 October 2002, Woods Hole, MA.
- Weishar, L., J. Teal, R. Hinkle, J. Balletto. 2002. Wetlands Restoration in the Delaware River Estuary: The Tale of Two Success Stories. Society of Wetland Scientists 23rd Annual Conference. 2-7 June 2002, Lake Placid, N.Y.
- Teal, J., L. Weishar, R. Hinkle, K. Strait, and B. Evans. 2002. The Role of Adaptive management in an Ongoing Wetlands Restoration Project. Society of Wetland Scientists 23rd Annual Conference. 2-7 June 2002, Lake Placid, N.Y.

Publications and Presentations (continued)

- Weishar, L.L., J.M. Teal and R. Hinkle. 2001. "Design and Implementation of Experimental Phragmites Control Techniques." Society of Wetland Scientist 22nd Annual Conference, Chicago, IL.
- Teal, J., L. Weishar and R. Hinkle. 2001. "Results of a 2-year Long Experiment in Phragmites Control." Estuarine Research Federation. 16th Biennial Conference of the Estuarine Research Foundation, Tampa, FL.
- Weishar, L., J. Teal, and R. Hinkle. 2001. Development of Marsh Hydrogeomorphology and Marsh Vegetation within a Salt Hay Farm Wetland Restoration Site. Proceedings of the 27th Annual Conference on Ecosystems and Creation; Tampa, FL. p. 26-44.
- Weishar, L. J. Teal and R. Hinkle. 2000. "Development of Marsh Hydrogeomorphology and Marsh Vegetation within a Salt Hay Farm Wetland Restoration Site." 27th Annual Conference on Ecosystems Restoration and Creation, Tampa, FL.
- Weinstein, M. and L. Weishar. 2000. "Beneficial Use of Dredged Materials to Enhance the Restoration Trajectories of Formerly Diked Lands." Sea Grant Ecosystems and Habitats. National Workshop on the Use of Dredged Material for Wetlands Restoration and Erosion Control. M.I.T., Cambridge, MA.
- Weishar, L. and J. Teal. 2000. "The Use of Numerical Modeling to Optimize a Wetlands Restoration Design." 21st Annual Conference of the Society of Wetlands Scientists, Quebec, Canada.
- Teal, J. and L. Weishar. 2000. "The Effects of Phragmites on Tidal Creek Banks." 21st Annual Conference of the Society of Wetlands Scientists, Quebec, Canada.
- Weishar, L., J. Teal and R. Hinkle. 2000. "Non Herbicide Alternative for Controlling Phragmites." 28th Annual Conference on Ecosystems Restoration and Creation. Tampa, FL., p. 1-16.
- Weishar, L., J. Teal and R. Hinkle. 2000. "Development of Marsh Hydrogeomorphology and Marsh Vegetation Within a Salt Hay Farm Wetland Restoration Site." 27th Annual Conference on Ecosystems Restoration and Creation, Tampa, FL.
- Aubrey, D.G., L.L. Weishar, and A.M. Kornick. 1999. "Evolution of the Hydroperiod and Tidal Channels at Commercial Township, NJ." Society of Wetlands Scientist. 20th Annual Meeting, Norfolk, VA.
- Teal, J. and L.L. Weishar. 1999. "Development of *Spartina Alterniflora* Cover Within Restored Salt Hay Farm Sites in Southern NJ." Society of Wetlands Scientist. 20th Annual Meeting, Norfolk, VA.
- Weishar, L.L., J. Teal, and R. Hinkle. 1999. "An Evaluation of Stream Order Analysis in Marsh Restoration Projects." Society of Wetlands Scientist. 20th Annual Meeting, Norfolk, VA.
- Weishar, L.L., J. Teal, and R. Hinkle. 1999. "The Design Process Used for Marsh Restoration in the Delaware River Estuary." Society of Wetlands Scientist. 20th Annual Meeting, Norfolk, VA.
- Teal, J. and L.L. Weishar. 1999. "An Overview of Approaches to the Use of Ecological Engineering and Adaptive Management in a Delaware Bay Marsh Restoration Project." Society of Wetlands Scientist. 20th Annual Meeting, Norfolk, VA.

Publications and Presentations (continued)

- Weishar, L.L., J.M. Teal, R. Hinkle, and K. Philipp. 1998. A Comparison of Two Restoration Designs for Degraded New Jersey Salt Marshes. Proceedings of the 25th Annual Conference on Ecosystem Restoration and Creation; Tampa, FL., pp. 1-15.
- Teal, J.M. and L.L. Weishar. 1998. "Salt Hay Farm Restoration Design: Combining Biological and Engineering Objectives." Proceedings of the American Society of Civil Engineers (ASCE) Wetlands Engineering & River Restoration Conference, Denver, CO.
- Weishar, L.L. and J.M. Teal. 1998. "The Role of Adaptive Management in the Restoration of Degraded Diked Salt Hay Farm Wetlands." Proceedings of the ASCE Wetlands Engineering & River Restoration Conference, Denver, CO.
- Aubrey, D.G. and L.L. Weishar. 1998. "Hydrodynamic Controls on Hydroperiods in Marshes." Proceedings of the ASCE Wetlands Engineering & River Restoration Conference, Denver, CO.
- Weishar L.L., J.M. Teal, J. Balletto. 1997. "Implementation of Adaptive Management to Restoration of Diked Salt hay Farms to Natural Marsh." Proceedings of the 24th Annual Conference on Ecosystems Restoration and Creation, Tampa, FL., pp. 1-16.
- Weishar, L.L., J. Teal, and J. Balletto. 1996. "The Design Process Utilized to Restore Diked Salt Hay Farms to Natural Marshes." Proceedings of 23rd Annual Conference on Ecosystems Restoration and Creation, Tampa, FL., pp. 87-106.
- Wood, J.D., J.S. Ramsey, and L.L. Weishar. 1996. "Beach Nourishment along Nantucket Sound: A Tale of Two Beaches." Proceedings of 9th Annual National Conference on Beach Preservation Technology. Florida Shore and Beach Preservation Association, Gainesville, FL.
- Weishar, L.L., W. Tiffney, Jr., N. DeKimpe, and M.L. Fields. 1991. "Shoreline Response to Offshore Shoals and Storms, Low Beach, Nantucket, MA." Proceedings, Coastal Zone '91, Coastal and Ocean Management, Long Beach, CA.
- Meadows, G.A., L.A. Meadows and L.L. Weishar. 1990. "DARTS Application to Remote Incident Wave Mapping." Technical Report OEL-9003-CERC, Ocean Engineering Laboratory, University of Michigan, Ann Arbor, MI.
- Weishar, L.L., D. Stauble, and K. Gingerich. 1989. "Reconnaissance Report: A Study of the Effects of the New Breach at Chatham Massachusetts." Tech Report CERC-89-(in publication), USACE Waterways Experiment Station, Vicksburg, MS.
- Weishar, L.L. and D.G. Aubrey. 1988. "Coastal Inlet Processes at Green Harbor, Massachusetts." Technical Report, CERC-88-10, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Fields, M.L. and L.L. Weishar. 1988. "Analysis of Sediment Transport in the Brazos River Diversion Channel Entrance Region." Miscellaneous Paper CERC-88-7, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.

Publications and Presentations (continued)

- Fields, M.L., J. Marino, and L.L. Weishar. 1988. "The Effects of Florida Tidal Inlets on Adjacent Shorelines." Proceedings, Beach Preservation Technology Conference, Florida Shore and Beach Society, Gainesville, FL, pp. 383-393.
- Weishar, L.L. and G.A. Meadows. 1987. "Suspended Sediment Concentrations Outside the Surf Zone, DUCK 85." Proceedings, Coastal Sediments '87, New Orleans, LA.
- Fields, M.L. and L.L. Weishar. 1987. "Distribution of Sediment Tracers Seaward of the Breaker Zone, DUCK 85." Proceedings, Coastal Sediments '87, New Orleans, LA.
- Meadows, G.A., L.L. Weishar, L.P. Meadows, and M.L. Fields. 1987. "DUCK 85, The Response of the Exposed Coastal Boundary Layer to a Storm Forcing: A Description of a Coordinated East Coast Experiment."
- Meadows, G.A., L.A. Meadows, L.L. Weishar, and M.L. Fields. 1987. "DARTS (Digital Automated Radar Tracking System) Applications to Tidal Inlet Hydrodynamic Studies." Proceedings, Symposium of Applied Hydrodynamics and Sediment Transport of Tidal Inlets, Woods Hole, MA, Springer-Verlag.
- Byrne, R.J., J.D. Boone, A.Y. Kuo, N.J. Shi, D.L. Wright, and L.L. Weishar. 1987. "Coastal Processes at Tidal Inlets, A Review of the State-of-the-Art." Technical Report, CERC-87- (OCE final pub approval), U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Schmaltz, R.A., L.L. Weishar, and M.L. Fields. 1987. In Preparation. "A Characterization of Open Water Disposal Sites For Sediment Transport Studies." Miscellaneous Paper, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Weishar, L.L. and M.L. Fields. 1985. "Annotated Bibliography on Sediment Transport Occurring over Ebb-Tidal Deltas." Miscellaneous Paper, CERC-85-11, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Weishar, L.L. 1984. "Tidal and Wave Induced Current Observations on the Virginia Inner-Shelf Region." Proceedings, 11th Annual Shelf and Shore Workshop, Norfolk, VA.
- Wood, W.L. and L.L. Weishar. 1984. "Beach Response to Long Period Lake-Level Variation." Proceedings, 19th International Conference on Coastal Engineering, Houston, TX.
- Everts, C.H. and L.L. Weishar. 1984. "Predictions of Wind-Induced Currents Near the Coast." Proceedings, 19th International Conference on Coastal Engineering, Houston, TX.
- Weishar, L.L. and M.J. Briggs. 1984. "Prototype Data Acquisition Program for a Proposed Dredged Material Offshore Bar, Virginia Beach, Virginia." Technical Report CERC-84- (NOA final review), U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Dewall, A.E., J.A. Tarnowski, B. Danielson, and L.L. Weishar. 1984. "Inlet Processes at Eel Pond, Falmouth, Massachusetts." Miscellaneous Paper, CERC-84-9, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.

Publications and Presentations (continued)

- Ferland, M. and L.L. Weishar. 1984. "Interpretative Analysis of Surficial Sediments as an Aid in Transport Studies of Dredged Material, Cape Canaveral, Florida." Miscellaneous Paper CERC-84-3, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- Weishar, L.L. and W.L. Wood. 1983. "An Evaluation of Offshore and Beach Processes on a Tideless Coast." *J. of Sed. Pet.*, Vol. 53, No. 3.
- Wood, W.L. and L.L. Weishar. 1982. "Influence of Lake Level Variation and Storm Waves on Stability." Proceedings, 3rd Workshop on Great Lake Coastal Erosion and Sedimentation, Burlington, Ontario, CANADA.
- Wood, W.L. and L.L. Weishar. 1982. "Influence of Seasonal Wind Variation on Coastal Stability in the Great Lakes." (abs), Transactions, American Geophysical Union, EOS, Vol. 63, No. 3.
- Weishar, L.L. 1982. "A Statistical Study of Process-Response Systems on a Tideless Coast." Dissertation presented to the Department of Geosciences, Purdue University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.
- Weishar, L.L. and W.L. Wood. 1982. "Impact of Long-term Water Level Fluctuations on Beach and Nearshore Changes in the Great Lakes." (abs), Transactions, American Geophysical Union, EOS, Vol. 63, No. 3.
- Wood, W.L., S.E. Davis, and L.L. Weishar. 1981. "Indiana Dunes National Lakeshore Monitoring Program." Interim Report No. 2, U.S. Army Engineer District, Chicago, IL.
- Davis, S.E., W.L. Wood, and L.L. Weishar. 1981. "Shoreline Situation Report, Laport County, Indiana." Special Report To State Planning Services Agency, Coastal Zone Management Program.
- Wood, W.L., L.L. Weishar, and S. Davis. 1979. "Storm Impact Changes in Beach and Nearshore Topography." Proceedings, Second Conference on Scientific Research in the National Parks, San Francisco, CA.
- Weishar, L.L. and W.L. Wood. 1979. "Systematic Changes in Beach and Nearshore Topography." Proceedings, Second Conference on Scientific Research in the National Parks, San Francisco, CA.
- Wood, W.L., S.E. Davis, L.L. Weishar, and C.E. Price. 1979. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report No. 9, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., S.E. Davis, L.L. Weishar, and C. Price. 1979. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report No. 10, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., S.E. Davis, and L.L. Weishar. 1979. "Potential Influence of Marquette Park Small Boat Harbor on Nearshore Hydromechanics and Sediment Transport." Technical Paper No. 11, Great Lakes Coastal Research Laboratory.
- Weishar, L.L. and R.J. Byrne. 1978. "A Field Study of Breaking Wave Characteristics." Proceedings, 16th International Conference on Coastal Engineering.

Publications and Presentations (continued)

- Wood, W.L., K.R. Magnus, P.A. Thacker, and L.L. Weishar. 1978. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report Journal No. 5, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., K.R. Magnus, P.A. Thacker, and L.L. Weishar. 1978. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report No. 5, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., C.E. Price, and L.L. Weishar. 1978. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report No. 6, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., L.L. Weishar, and C.E. Price. 1978. "Indiana Dunes National Lakeshore Monitoring Program." Technical Report No. 7, U.S. Army Engineer District, Chicago, IL.
- Wood, W.L., S.E. Davis, L.L. Weishar, and C.E. Price. 1978. "Indiana Dunes National Monitoring Program." Technical Report No. 8, U.S. Army Engineer District, Chicago, IL.
- Weishar, L.L. 1978. "An Examination of Shoaling Wave Parameters." Thesis presented to the Department of Geological Oceanography, Virginia Institute of Marine Science, in partial fulfillment of the requirements for the degree of Master of Arts, VA.