

LARRY G. WARD - CURRICULUM VITAE

Personal Information

Affiliations: University of New Hampshire Department of Earth Sciences, Center for Coastal and Ocean Mapping, and Jackson Estuarine Laboratory
Address: 24 Colovos Road, Chase Engineering Building, University of New Hampshire, Durham, NH 03824
Telephone/Fax: 603 862-2337; 603 862-0893
e-mail: larry.ward@unh.edu

Education

1967-1972 B.A. in Earth Sciences, University of New Hampshire, Durham, N.H.
1972-1974 M.S. in Marine Geology, University of South Carolina, Columbia, S.C.
1974-1978 Ph.D. in Marine Geology, University of South Carolina, Columbia, S.C.

Professional Positions

Summer 1995-Present - Associate Research Professor of Earth Sciences, University of New Hampshire, Durham

Winter 1989-Spring 1995 - Assistant Research Professor of Earth Sciences, University of New Hampshire, Durham

Summer 1987-Winter 1989 - Associate Research Professor, Center for Estuarine Studies, Horn Point Laboratories, University of Maryland, Cambridge

Summer 1980-Summer 1987 - Assistant Professor, Center for Estuarine Studies, Horn Point Laboratories, University of Maryland, Cambridge

Winter 1978-Summer 1980 - Research Scientist/Visiting Assistant Professor, Department of Geology, University of South Carolina, Columbia

Professional Societies

Geological Society of America
American Geophysical Union
Coastal Education and Research Foundation

PROFESSIONAL EXPERTISE

The focus of my research, publishing, and teaching over the last ~30 years has been on coastal, estuarine and inner shelf sedimentology and surficial processes. My most recent research focuses on seafloor characterization and change analyses, coastal geomorphology and processes, and the stratigraphy, sea-level history and Holocene evolution of nearshore marine systems. My teaching experience ranges from introductory geology, oceanography, and sedimentology to advanced level courses in coastal and estuarine systems.

PUBLICATIONS

Scientific Journals, Book Chapters, or Proceedings (Refereed) – In Review or Press

Grizzle, R.E., L.G. Ward, L.A. Mayer, M.A. Malik, A.B. Cooper, H.A. Abeels, J.K. Greene, M.A. Brodeur and A.A. Rosenberg. In Revision. Effects of a large fishing closure on benthic communities in the western Gulf of Maine, USA: recovery from the effects of gillnets and otter trawls. *Fishery Bulletin*.

Pe'eri, S., J.V. Gardner, L.G. Ward and J.R. Morrison. In Review. The seafloor: a key factor in lidar bottom detection. In Revision. *IEEE: Journal of Ocean Engineering*.

Scientific Journals, Book Chapters, or Proceedings (Refereed) - Published

Ward, L.G., B.J. Zaprowski, K.D. Trainer and P.T. Davis. 2008. Stratigraphy, pollen history and geochronology of tidal marshes in a Gulf of Maine estuarine system: climatic and relative sea level impacts. *Marine Geology* 256:1-17, DOI:10.1016/j.margeo.208.08.004

Ericson, J.P., C.J. Vörösmarty, S.L. Dingman, L.G. Ward and M. Meybeck. 2006. Effective sea-level rise in deltas: causes of change and human dimension implications. *Global and Planetary Change* 50:63-82.

Ward, L.G. and F.L. Bub. 2005. Temporal variability in salinity, temperature and suspended sediments in a Gulf of Maine Estuary (Great Bay Estuary, New Hampshire). In: D.F. FitzGerald and D.F. J. Knight (eds.), High Resolution Morphodynamics and Sedimentary Evolution of Estuaries, p.115-142. Academic Press.

Grizzle, R.E., L.G. Ward, J.R. Adams, S.J. Dijkstra and B. Smith. 2005. Mapping and characterizing oyster reefs using acoustic techniques, underwater videography, and quadrat sampling. In: P.W. Barnes and J.P. Thomas (eds.), Benthic Habitats and the Effects of Fishing, p.153-159. American Fisheries Society Symposium 41. American Fisheries Society, Bethesda, Maryland.

Jakobsson, M., A. Armstrong, B. Calder, L. Huff, L. Mayer and L. Ward. 2005. On the use of historical bathymetric data to determine changes in bathymetry. *International Hydrographic Review*, Vol. 6, No. 3 (New Series), p. 25-41.

Ward, L.G. 2004. Variations in physical properties and water quality in the Webhannet River Estuary (Wells National Estuarine Research Reserve, Maine). *Journal of Coastal Research* SI45:39-58.

Ward, L.G. and F.S. Birch. 1999. Sedimentology of the New Hampshire inner continental shelf based on subbottom seismics, side scan sonar, bathymetry, and bottom samples. *Marine Georesources and Geotechnology* 17:165-172.

Ward, L.G., M.S. Kearney and J.C. Stevenson. 1998. Variations in sedimentary environments and accretionary processes in estuarine marshes undergoing rapid sea level rise, Chesapeake

Bay. *Marine Geology* 151:111-134.

Kearney, M.S., J.C. Stevenson and L.G. Ward. 1994. Spatial and temporal changes in marsh vertical accretion rates at Monie Bay: implications for sea-level rise. *Journal of Coastal Research* 10:1010-1020.

Ward, L.G. and G. M. Ashley. 1989. Introduction: coastal lagoonal systems. *Marine Geology* 88:181-185.

Stevenson, J.C., L.G. Ward and M.S. Kearney. 1988. Sediment transport and trapping in marsh systems: implications of tidal flux studies. *Marine Geology* 80:37-59.

Fisher, T.R., L.W. Harding, Jr., D.W. Stanley and L.G. Ward. 1988. Phytoplankton, nutrients, and turbidity in the Chesapeake, Delaware, and Hudson estuaries. *Estuarine Coastal Shelf Science* 27:61-93.

Ward, L.G., T.F. Moslow and K. Finkelstein. 1987. Geomorphology of a tectonically active, glaciated coast, south-central Alaska. *In*: D.M. FitzGerald and P.S. Rosen (eds.), Glaciated Coasts, p. 1-31. Academic Press.

Shipp, R.C., S.A. Staples and L.G. Ward. 1987. Controls and zonation of geomorphology along a glaciated coast, Gouldsboro Bay, Maine. *In*: D. M. FitzGerald and P.S. Rosen (eds.), Glaciated Coasts, p. 209-231. Academic Press.

Ward, L.G. and R.R. Twilley. 1986. Seasonal distributions of suspended particulate material and dissolved nutrients in a coastal plain estuary. *Estuaries* 9:156-168.

Kearney, M.S. and L.G. Ward. 1986. Accretion rates in brackish marshes of a Chesapeake Bay estuarine tributary. *Geo-Marine Letters* 6:41-49.

Stevenson, J.C., L.G. Ward and M.S. Kearney. 1986. Vertical accretion in marshes with varying rates of sea level rise. *In*: D. Wolf (ed.), Estuarine Variability, p.241-259. Academic Press.

Ward, L.G. 1985. The influence of wind waves and tidal currents on sediment resuspension in middle Chesapeake Bay. *Geo-Marine Letters* 5:71-75.

Ward, L.G., W.M. Kemp and W.R. Boynton. 1984. The influence of waves and seagrass communities on suspended particulate dynamics in an estuarine environment. *Marine Geology* 59:85-103.

Kemp, W.M., W.R. Boynton, R.R. Twilley, J.C. Stevenson and L.G. Ward. 1984. Influence of submerged vascular plants on ecological processes in upper Chesapeake Bay. *In*: V.S. Kennedy (ed.), The Estuary as a Filter, p. 367-394. Academic Press.

Ward, L.G. 1981. Suspended-material transport in marsh tidal channels, Kiawah Island, South Carolina. *Marine Geology* 40:139-154.

Ward, L.G., M. Stephen and D. Nummedal. 1976. Hydraulics and morphology of glacial outwash distributaries, Skeidararsandur, Iceland. *Journal Sedimentary Petrology* 46:770-777.

Proceedings from Professional Meetings

Vorosmarty, C.J., J.P. Ericson, S.L. Dingman, L.G. Ward, and M. Meybeck. 2007. Future impacts of fresh water resource management: sensitivity of coastal deltas. Proceedings of Symposium HS2005 at IUGG2007, IAHS Publication 314, p. 231-238.

Ward, L.G., D.M. Burdick and J.R. Adams. 2003. Preliminary studies of the impact of sea level rise on coastal environments (New Hampshire, USA). Proceedings from Coastal Sediments '03 (May 18-23, 2003). East Meets West Productions, 9708 Padre Island Dr., Suite B-102, Corpus Christi, TX 78418. (Proceedings Contained in CD Format). 13 pp.

Grizzle, R.L., L.G. Ward, R. Langan, G.M. Schnaittacher, J.A. Dijkstra and J.R. Adams. 2003. Environmental monitoring in the vicinity of an open ocean aquaculture site in the southwestern Gulf of Maine: some preliminary results. *In: C.J. Bridger and B.A. Costa-Pierce (eds.), Open Ocean Aquaculture from Research to Commercial Reality*, p. 105-117. World Aquaculture Society, 143 J.M. Parker Coliseum, Baton Rouge, LA., USA.

Ward, L.G. and F.S. Birch. 1998. Sedimentology of the New Hampshire inner continental shelf based on seismics, side-scan sonar, bathymetry, and bottom samples. *In: G. Dellagiarino, L.A. Miller, and S. Doenges (eds.), Studies Related to Continental Margins - A Summary of Year - Nine and Year - Ten Activities*, p. 62-68. U.S. Department of Interior Minerals Management Service and Association of American State Geologists Continental Margins Committee, Verdon, Virginia.

Ward, L.G. 1994. Nearbottom currents and sediment transport on the inner continental shelf of New Hampshire. *In: G. Dellagiarino, A.R. Masterson and L.A. Miller (eds.), Studies Related to Continental Margins - A Summary of Year - Five and Year - Six Activities*, p. 150-156. U.S. Department of Interior Minerals Management Service and Association of American State Geologists Continental Margins Committee, Verdon, Virginia.

Ward, L.G. and F.E. Anderson. 1990. Sedimentology of sand deposits from the inner continental shelf of New Hampshire. *In: M.C. Hunt, S. Doenges and G.S. Stubbs (eds.), Studies Related to Continental Margins - A Summary of Year - Three and Year - Four Activities*, p. 194-198. U.S. Department of Interior Mineral Management Service and Association of American State Geologists Continental Margins Committee, Verdon, Virginia.

Stevenson, J.C., L.G. Ward, M.S. Kearney and T. Jordan. 1985. Sedimentary processes and sea level rise in tidal marsh systems in Chesapeake Bay. *In: E. Meyer (ed.), Wetlands of the Chesapeake: Protecting the Future of the Bay*, p. 37-62. Environmental Law Institute,

Washington, DC.

Kana, T. and L.G. Ward. 1981. Nearshore suspended load during storm and post-storm conditions. *In: Seventeenth International Coastal Engineering Conference*, p. 1158-1173. American Society Civil Engineers, New York.

Ward, L.G. 1979. Hydrodynamics and sedimentological processes in salt marsh systems. *In: Sixteenth International Coastal Engineering Conference*, p. 1953-1970. American Society Civil Engineers, New York.

Ruby, C.H., L.G. Ward, I.A. Fischer and P.J. Brown. 1977. Buzzards Bay oil spill: an arctic analogue. *In: G.R. Peters (ed.), Fourth International Conference on Port and Ocean Engineering Under Antic Conditions*, p. 844-855. Ocean Engineering Information Centre, St. Johns, Newfoundland.

Abstracts/Oral Presentations (* Identifies Speaker, # Invited Paper)

Felzenberg, J. A.*, L.G. Ward, Y. Rzhano, J.D. Irish and L.A. Mayer. 2008. Detecting bedform migration in Portsmouth Harbor, New Hampshire, USA, on relatively short spatial and temporal scales. American Geophysical Union Meeting, December 15-19, San Francisco, CA, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract OS21E-1219.

Pe'eri, S.V.*, J.V. Gardner, J.R. Morrison and L.G. Ward. 2008. Ground-truth results of comparison of airborne lidar bathymetry (ALB) in subtidal coastal environments. American Geophysical Union Meeting, December 15-19, San Francisco, CA, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract G53A-0631

Felzenberg, J.*, L. Ward, Y. Rzhano and L. Mayer. 2008. Detecting bedform migration in Portsmouth Harbor on relatively short time-scales from high-resolution multibeam bathymetry. Shallow Survey 08 Biannual Conference, October 21-24, Portsmouth, NH.

Malik, M, L*. Mayer, L. Fonseca, L. Ward, L. Huff and B. Calder. 2008. Approaches and requirements of quantitative comparison of the multibeam sonar benthic acoustic backscatter. Shallow Survey 08 Biannual Conference, October 21-24, Portsmouth, NH.

Ward, L.G^{#*}, R.Grizzle, J. Irish and R. Langan. 2007. Environmental monitoring of an experimental open ocean aquaculture facility in the western Gulf of Maine. Invited Presentation at Symposium entitled "Impacts of Coastal Ocean Aquaculture". American Fisheries Society Annual Meeting, September 3-6, San Francisco, CA.

Pe'eri, S.*, J.V. Gardner, L. Ward, R. Morrison and J. Lillycrop. 2007. Identifying subtidal coastal environments using airborne lidar bathymetry (ALB). American Geophysical Union Meeting, December 10-14, San Francisco, CA.

Pe'eri, S.*, J.V. Gardner, L. Ward, R. Morrison and J. Lillycrop. 2007. The seafloor as key component for the success of lidar in bottom detection. JALBTCX 8th Annual Workshop, May

23-24, Seattle, WA.

Ward, L.G.*, M.A. Malik, G. R. Cutter, M.A. Brodeur, R.E. Grizzle, L.A. Mayer and L. Huff. 2006. High resolution benthic mapping using multibeam sonar, videography, and sediment sampling in the Gulf of Maine: application to geologic and fisheries research. Geological Society of America Abstracts with Programs, volume 38, number 7, p. 377.

Grizzle, R.E. *, L.G. Ward, L.A. Mayer and A.B. Cooper, A.A. Rosenberg, M. Brodeur, J.K. Greene, H. Abeels, and M. Malik. 2006. Effects of a large fishing closure area on bottom habitats in the western Gulf of Maine, USA. International Council for the Exploration of the Sea (ICES) Conference, Boston, MA.

Grizzle, R.E*., L.G. Ward, L.A. Mayer, A.B. Cooper, A.A. Rosenberg, M. Brodeur, J.K. Greene, H. Abeels and M. Malik. 2006. Effects of the Western Gulf of Maine Closure Area on seafloor habitats: GIS-based assessments. Massachusetts Institute of Technology Sea Grant Symposium on Geographic Information Systems and Ocean Mapping in Support of Fisheries Research and Management, Cambridge, MA.

Ward, L.G.* and D.M. Burdick. 2004. Salt marsh development and processes in a northern New England system. Abstracts, AGU Chapman Conference Salt Marsh Geomorphology: Physical and Ecological Effects on Landform, Halifax, Nova Scotia (October 9-14, 2004).

Ward, L.G.* 2003. Sedimentologic and stratigraphic studies on the New Hampshire shelf. Abstracts, Geological Society of America (GSA) Annual Meeting, Seattle, Washington, volume 35, number 6, p. 69.

Ward, L.G.*, D.M. Burdick and J.R. Adams. 2003. Preliminary studies of the impact of sea-level rise on coastal environments (New Hampshire, USA). Abstracts, Coastal Sediments '03, Clearwater, Florida. p. 208-209. East Meets West Productions, 9708 Padre Island Dr., Suite B-102, Corpus Christ, TX 78418.

Grizzle, R.E. *, L.G. Ward and J.R. Adams. 2003. Mapping and quantitatively characterizing seabed habitats with underwater videography. Abstracts, Emerging Technologies, Tools, and Techniques to Manage Our Coasts in the 21st Century Meeting, USEPA, Cocoa Beach, Florida.

Ward, L.G.* 2002. Sources and controls of suspended sediments and turbidity in the Great Bay Estuary, New Hampshire. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Springfield, Massachusetts.

Grizzle, R. E*, L.G. Ward and J.R. Adams. 2002. Mapping and characterizing subtidal oyster reefs using GIS and underwater videography. Abstracts, Fishing and Benthic Habitats 2002; Symposium on Effects of Fishing Activities on Benthic Habitats, Tampa, Florida.

Grizzle, R.E. *, L.G. Ward, J.R. Adams, S. Dijkstra and J. Nelson. 2002. A comparison of acoustic techniques, videography, and quadrat sampling for mapping and characterizing subtidal

oyster reefs. Abstracts, National Shellfisheries Association, Annual Meeting, Mystic, Connecticut.

Adams, J.R.*, R.E. Grizzle, L.G. Ward, S. Dijkstra and J. Nelson. 2002. A comparison of acoustic techniques, videography, and quadrat sampling for mapping and characterizing subtidal oyster reefs. Abstracts, Benthic Ecology Meeting, Orlando, Florida.

Greene, J.K.*, R.E. Grizzle, D. Burdick, L.G. Ward and Ann Reid. 2002. Constructing shellfish reefs in a polluted, urban estuary: scientists join with the community to work for a common goal. Abstracts, National Shellfisheries Association, Annual Meeting, Mystic, Connecticut.

Ward, L.G.* and F.L. Bub. 2001. Suspended sediment dynamics in the Great Bay Estuary, NH: patterns and controlling processes. Abstracts, Geological Society of America (GSA) Annual Convention, Boston, Massachusetts, volume 33, number 6, p. A273.

Grizzle, R.L., L.G. Ward*, R. Langan, G. Schnaittacher and J. Dijkstra. 2001. Environmental monitoring in the vicinity of an open ocean aquaculture site in the southwestern Gulf of Maine: some preliminary results. Abstracts, Open Ocean Aquaculture IV (from Research to Reality) Symposium, St. Andrew, New Brunswick. Mississippi-Alabama Sea Grant Consortium, P.O. Box 7000, Ocean Springs, MS.

Zaprowski, B.J.*, P.T. Davis and L.G. Ward. 1999. The use of pine pollen to refine accretion measurements in a new England salt marsh. Abstracts, Geological Society of America (GSA) Annual Convention, Denver, Colorado, volume 31, number 7, p. 31.

Zaprowski, B.J.*, L.G. Ward and P.T. Davis. 1999. The impact of European colonization on an estuarine salt marsh. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Providence, Rhode Island, volume 31, number 2, p. A-82.

Ward, L.G.* 1997. Sedimentology of New Hampshire's inner continental shelf. Abstracts, Fourth Symposium on Studies Related to Continental Margins - A Summary of Year-Nine and Year-Ten Activities, Minerals Management Service, Corpus Cristi, Texas.

Buchholtz ten Brink, M.*, F.T. Manheim, S.J. Jones, L.G. Ward, P.F. Larsen, B.W. Tripp, J.W. Farrington and G.T. Wallace. 1996. Contaminated-sediment database for the Gulf of Maine. Abstracts, Gulf of Maine Ecosystems Dynamics Meeting, NOAA Regional Research Program for the Gulf of Maine. Halifax, Nova Scotia.

Kelley, J.T.*, S.M. Dickson, W.A. Barnhardt, D.E. Belknap, A.R. Kelley and L.G. Ward. 1995. Mapping the Gulf of Maine with side-scan Sonar: a classification of submarine physiographic features. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Cromwell, Connecticut, volume 27, number 1, p. 59.

Barnhardt, W.A.*, D.F. Belknap, A.R. Kelley, J.T. Kelley, S.M. Dickson and L.G. Ward. 1995. Mapping the Gulf of Maine with side-scan sonar: Detailed mosaics of muddy, sandy, and rocky environments. Abstracts, Northeastern Geological Society of America (NEGSA) Annual

Convention, Cromwell, Connecticut, volume 27, number 1, p. 28.

Ward, L.G.* 1994. Geomorphology, accretionary processes and sea level rise in salt marshes in northern New England. Abstracts, Geological Society of America (GSA) Annual Convention, Seattle, Washington, volume 26, number 7, p. 69.

Ward, L.G.* 1994. Depositional environments in the Great Bay/Piscataqua River Estuary, New Hampshire. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Binghamton, NY, volume 26, number 3.

Ward, L.G.* 1993. Geomorphology and sedimentology of the New Hampshire coastline and inner shelf. Abstracts, Geological Society of America (GSA) Annual Convention, Boston, Massachusetts, volume 25, number 6.

Ward, L.G.* 1993. Quaternary sedimentation in a tide-dominated estuary, northern New England. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Burlington, Vermont, volume 25, number 2, pp. 88.

Ward, L.G.* 1993. Geomorphology and accretionary processes in estuarine salt marshes in northern New England. Abstracts, International Geographical Union Commission on Coastal Systems - Sediment Dynamics, Deposition and Erosion in Temperate Salt Marshes, Louisiana Universities Marine Consortium, Chauvin, Louisiana.

Ward, L.G.* and F.S. Birch. 1992. Sedimentation processes and age of Quaternary deposits on New Hampshire's inner continental shelf. Abstracts, Third Symposium on Studies Related to Continental Margins - A Summary of Year-Five and Year-Six Activities, MMS, Austin, Texas.

Ward, L.G.*#. 1991. Marsh geomorphology, accretionary processes and sea level rise in New Hampshire. Abstracts, Coastal Wetland Ecology and Management Symposium. New Orleans, Louisiana.

Anderson, F.E. and L.G. Ward*. 1989. Sedimentology of sand deposits from the inner continental shelf of New Hampshire. Abstracts, Second Symposium on Studies Related to Continental Margins - A Summary of Year-Three and Year-Four Activities, MMS, Austin, Texas.

Ward, L.G.* and M.S. Kearney. 1988. Impact of sea level rise on the sedimentology and stratigraphy of estuarine systems. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic Paleontologists and Mineralogists (SEPM) Annual Convention, Houston, Texas.

Ward, L.G.*, M.S. Kearney and J.C. Stevenson. 1987. Marsh accretion compared to sea level rise at Monie Bay Reserve in Chesapeake Bay. Abstracts, Ninth Estuarine Research Federation (ERF) Conference, New Orleans, Louisiana.

Stevenson, J.C.*#, L.G. Ward and M.S. Kearney. 1987. Forces driving sedimentary processes in tidal marshes. Abstracts, Ninth Estuarine Research Federation (ERF) Conference, New Orleans, Louisiana.

Mihursky, J.A.*, L.G. Ward, H. Millsaps, N. Mountford and C.T. Morris. 1987. Benthic animal-sediment relationships in the Maryland coastal zone. Abstracts, Ninth Estuarine Research Federation (ERF) Conference, New Orleans, Louisiana.

Ward, L.G.*, M.S. Kearney and J.C. Stevenson. 1986. Accretion rates and recent changes in sediment composition of estuarine marshes, Chesapeake Bay. American Society of Limnology and Oceanography (ASLO) Winter Meeting, San Francisco, California. *EOS* 67:998.

Stevenson, J.C.*, L.G. Ward and M.S. Kearney. 1986. Sediment transport and trapping in marsh systems: implications of tidal flux studies. American Society of Limnology and Oceanography (ASLO) Winter Meeting, San Francisco, California. *EOS* 67:999.

Ward, L.G.* and M.S. Kearney. 1985. Depositional models of estuarine fill deposits, Chesapeake Bay. Abstracts, Society of Economic Paleontologists and mineralogists (SEPM) Annual Mid-Year Convention, Golden, Colorado.

Ward, L.G.* 1985. Effects of benthic organisms on sediment dynamics in middle Chesapeake Bay. Eighth Estuarine Research Federation (ERF) Conference, Durham, New Hampshire. *Estuaries* 8:63A.

Stevenson, J.C.*, L.G. Ward and M.S. Kearney. 1985. Vertical accretion in marshes with varying rates of sea level rise. Eighth Estuarine Research Federation (ERF) Conference, Durham, New Hampshire. *Estuaries* 8:71A.

Ward, L.G. and Twilley, R.R.* 1985. Physical and chemical processes in the Choptank River estuary. Abstracts, Symposium on Circulation Patterns in Estuaries. College of William and Mary, Gloucester Point, Virginia.

Ward, L.G.* 1984. Fine-grained sediment dynamics in estuaries. Abstracts, Society of Economic Paleontologists and Mineralogists (SEPM) Annual Mid-Year Convention, Fine-grained Sediment Symposium, San Jose, California.

Ward, L.G.* 1983. The influence of wave resuspension and seagrass communities on sediment dynamics in a shallow estuarine embayment. Seventh Estuarine Research Federation (ERF) Conference, Virginia Beach, Virginia. *Estuaries* 6:316.

Shipp, R.C.*, S.A. Staples and L.G. Ward. 1983. Geomorphic trends of a glaciated coastal bay, Gouldsboro Bay, Maine. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Monticello, New York.

Kana, T.* and L.G. Ward. 1980. Nearshore suspended load during storm and post-storm

conditions. Abstracts, Seventeenth Conference on Coastal Engineering, Sydney, Australia. American Society of Civil Engineers.

Ward, L.G.* 1979. Hydrodynamics, morphology, and sediment transport in salt marsh tidal channels, South Carolina. Abstracts, Fifth Estuarine Research Federation (ERF) Conference, Jekyll Island, Georgia.

Ward, L.G.* and D.D. Domeracki. 1979. Hydrodynamic and sedimentological processes in tidal channels. Abstracts, International Association of Sedimentologists (IAS) Meeting on Holocene Marine Sedimentation in the North Sea Basin, Texel, The Netherlands.

Ward, L.G.* 1978. Physical and sedimentological processes in salt marsh systems. Abstracts, Sixteenth Conference on Coastal Engineering, Hamburg, Germany. American Society of Civil Engineers.

Fischer, I.A.*, L.G. Ward and C.H. Ruby. 1978. A depositional model of a meso-tidal back-barrier environment. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic Paleontologists and Mineralogists (SEPM) Annual Convention, Oklahoma City, Oklahoma.

Ward, L.G.* 1978. Physical and sedimentological processes in a mesotidal salt marsh. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic Paleontologists and Mineralogists (SEPM) Annual Convention, Oklahoma City, Oklahoma.

Ward, L.G. and D. Domeracki.* 1978. The stratigraphic significance of back-barrier tidal channel migration. Abstracts, Southeastern Geological Society of America (SEGSA) Annual Convention, Chattanooga, Tennessee.

Ruby, C.H.*, L.G. Ward, I.A. Fischer and P.J. Brown. 1977. Buzzards Bay oil spill: an arctic analogue. Abstracts, Fourth International Conference On Port and Ocean Engineering under Arctic Conditions (POAC), Memorial University, Newfoundland.

Hubbard, D.K.*, L.G. Ward and D.M. FitzGerald. 1976. Reef morphology and sediment transport, Lucaya, Grand Bahama Island. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic Paleontologists and Mineralogists (SEPM) Annual Convention, New Orleans, Louisiana.

Nummedal, D.*, L.G. Ward and M. Stephens. 1974. Hydrodynamics of outwash plain sedimentation, southern Iceland. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic Paleontologists and Mineralogists (SEPM) Annual Convention, San Antonio, Texas.

Hine, A.C., J.C. Boothroyd*, L.G. Ward, D.K. Hubbard and M.O. Hayes. 1974. Morphology, processes and recent sedimentary history of a sandur coast, Southern Iceland. Abstracts, American Association of Petroleum Geologists (AAPG) and Society of Economic

Paleontologists and Mineralogists (SEPM) Annual Convention, San Antonio, Texas.

Ward, L.G.*, F.E. Anderson and T. Shevenall. 1973. Variations in total particulate matter off the New Hampshire coast. Abstracts, Northeastern Geological Society of America (NEGSA) Annual Convention, Allentown, Pennsylvania.

Book

Ward, L.G., P.S. Rosen, W.J. Neal, O.H. Pilkey, Jr, O.H. Pilkey, Sr., G.L. Anderson and S.J. Howie. 1989. Living With Chesapeake Bay and Virginia's Ocean Shores. Book published by Duke University Press. 236 p.

Map

Ward, L.G. 2000. Surficial Geology of the New Hampshire Inner Continental Shelf, Salisbury Beach, Massachusetts to the Piscataqua River, New Hampshire. Map produced by the University of New Hampshire Institute for the Study of the Earth Ocean and Space, GRANIT, Durham, NH 03824 and funded by the National Oceanic and Atmospheric Administration, Regional Research Program for the Gulf Of Maine.

Theses

Ward, L.G. 1978. Physical and sedimentological processes in a salt marsh tidal channel, Kiawah Island, South Carolina. Ph.D. Dissertation, University of South Carolina, Columbia, South Carolina. 180 p.

Ward, L.G. 1974. Hydrology, morphology and sediment distribution of the Skeidara Tributaries, Southern Iceland. M.S. Thesis, University of South Carolina, Columbia, South Carolina. 91 p.

Reports

Ward, L.G., R.G. Grizzle and J.D. Irish. 2008. UNH OOA Environmental Monitoring Program Final Report for 2004-2008. UNH AMAC (CINEMar) OOA Report.

Grizzle, R.G. and L.G. Ward. 2008. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report.

Ward, L.G., J.D. Irish, and R.G. Grizzle. 2007. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report.

Ward, L.G., R.G. Grizzle, and J.D. Irish. 2006. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report (<http://\ooa.unh.edu>).

Ward, L.G., R.G. Grizzle, and J.D. Irish. 2005. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report (<http://\ooa.unh.edu>).

Ward, L.G., R.G. Grizzle, D.W. Fredriksson and J.D. Irish. 2004. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report

(<http://ooa.unh.edu>).

Ward, L.G., R.G. Grizzle, D.W. Fredriksson and J.D. Irish. 2003. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report (<http://ooa.unh.edu>).

Ward, L.G., R.G. Grizzle, D.W. Fredriksson and J.D. Irish. 2002. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report (<http://ooa.unh.edu>).

Burdick, D, J. Greene, S. McDermott, R. Grizzle, L. Ward and A. Reid. 2002. An Integrated Multi-Habitat Restoration of South Mill Pond Using Shellfish Reefs and Salt Marshes to Improve Fisheries and Water Quality in Portsmouth, NH. Final Report for Grant Number NA07FZ0661 from NOAA Restoration Center, Community-Based Restoration Program, 1315 East West Highway, MD 20910. 29 pp.

Ward, L.G., R.G. Grizzle and D.W. Fredriksson. 2001. UNH OOA Environmental Monitoring Program Annual Progress Report. UNH AMAC (CINEMar) OOA Report (<http://ooa.unh.edu>).

Ward, L.G., R.E. Grizzle, F.L. Bub, R. Langan, G. Schnaittacher and J.A. Dijkstra. 2001. Site Description and Environmental Monitoring: Report on Activities from Fall 1997 to Winter 2000. UNH AMAC (CINEMar) OOA Report (<http://ooa.unh.edu>).

Ward, L.G. and J.R. Adams. 2001. A Preliminary Assessment of Tidal Flooding along the New Hampshire Coast: Past, Present and Future. New Hampshire Office of Emergency Management and the Office of State Planning Coastal Program. 2 ½ Beacon Street, Concord, NH. (UNH CMB/JEL Report Series Number 54).

Ward, L.G. and F.L. Bub. 2000. Suspended Particulate Material and Physical Properties (Salinity, Temperature, Turbidity) of the Great Bay Estuary: Distribution and Major Controlling Processes. NOAA/UNH Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) Technical Report, Durham, NH. (UNH CMB/JEL Report Series Number 53).

Ward, L.G., K. Trainer, D.M. Burdick and A.C. Mathieson. 1997. Condition and Change Analysis of Tidal Wetlands on the Squamscott River, Great Bay Estuary, New Hampshire Using Remote Sensing. New Hampshire Water Resources Research Center Research Report 63. University of New Hampshire, Durham, NH. 29 p., plus figures and appendices.

Ward, L.G. and F.S. Birch. 1996. Surficial sediment distribution map of the inner continental shelf off southern New Hampshire based on side-scan sonar and bottom samples. Final Report Cooperative Agreement 14-35-0001-30731, U.S. Department of Interior, Minerals Management Service, Herdon, Va.

Ward, L.G. 1995. Sedimentology of the lower Great Bay/Piscataqua River Estuary.

Department of the Navy, NCCOSC RDTE Division Report, San Diego, California. 102 p. (UNH CMB/JEL Contribution Series Number 314). (Publication - Technical Report).

Ward, L.G. 1994. Precipitation, streamflow and water quality characteristics of the Webhannet River Estuary, Wells, Maine. Final Report U.S. Department of Commerce, NOAA, NOS, Office of Ocean and Coastal Resource Management, Sanctuary Program Division, Washington, D.C. 113 p.

Ward, L.G. 1994. Textural characteristics and surficial sediment distribution map of the lower Great Bay/Piscataqua River Estuary. Department of the Navy, NCCOSC RDTE Division Report, San Diego, California. 34 p. (UNH CMB/JEL Contribution Series Number 295).

Short, F.T., H. Hoven, J. Whitten, B. Johnston, R.E. Grizzle, L.G. Ward, and D. Burdick. 1994. Lobster use of eelgrass habitat in the Piscataqua River on the New Hampshire/Maine border. In: F.T. Short and L.G. Ward (eds.), Collection and Analysis of Ecological Data from the Great Bay Estuary. Final Report to the Department of Navy, NCCOSC RDTE Division Report, San Diego, California. (UNH CMD/JEL Contribution Series Number 302).

Short, F.T. and L.G. Ward (editors). 1994. Collection and Analysis of Ecological Data from the Great Bay Estuary. Final Report to the Department of the Navy, NCCOSC RDTE Division Report, San Diego, California. 34 p.

Ward, L.G. and F.S. Birch . 1993. Subbottom seismic, side-scan sonar, and bathymetric survey of the inner continental shelf of (southern) New Hampshire. Final Report Cooperative Agreement 14-35-0001-30534, U.S. Department of Interior, Minerals Management Service, Herdon, Va. 11 pp.

Ward, L.G., A.C. Mathieson and S.J. Weiss. 1993. Tidal wetlands in the Great Bay/Piscataqua River estuarine system: location and vegetational characteristics. Final Report New Hampshire Office of State Planning Coastal Program, Concord, NH. 48 pp.

Ward, L.G. 1993. Texture of bottom sediments at sampling stations in the lower Piscataqua River Estuary. In: R.K. Johnston, W.R. Munns, Jr., F.T. Short and H.A. Walker (eds.), An Estuarine Ecological Risk Assessment Case Study for Portsmouth Naval Shipyard, Kittery, Maine, p. 3.1-1 to 3.1-7. Department of the Navy, NCCOSC RDTE Division Technical Report 1627, San Diego, California.

Ward, L.G. and P.M. Pope. 1992. Bibliography of the geology of the continental shelf, coastline and estuaries of New Hampshire and adjacent regions. Final Report Cooperative Agreement 14-35-0001-30497, U.S. Department of Interior, Minerals Management Service, Herdon, Va. 104 pp.

Ward, L.G. 1992. Preliminary results of the initiation of research of the coastal geomorphology, sedimentology and depositional processes along the New Hampshire coast. Final Report University of Maine/University of New Hampshire Sea Grant Program, Development Project,

Durham, NH. 8 pp.

Jones, S.H., R. Langan, F.T. Short and L.G. Ward. 1992. Transport and fate of microbial contaminants and suspended sediments in the Great Bay: effects on water quality and management. Final Report University of New Hampshire Water Resources Research Center/U.S. Geological Survey, Durham, New Hampshire.

Ward, L.G. 1992. Estuarine geomorphology. In: F. T. Short (ed.), The Ecology of the Great Bay Estuary, New Hampshire and Maine: An Estuarine Profile and Bibliography, Chapter 4, pp. 39-43. NOAA - Coastal Ocean Program Publication. 222 pp.

Ward, L.G. 1990. A pilot study to evaluate the sedimentary environment of an offshore aggregate deposit on the inner continental shelf of New Hampshire. Final Report Cooperative Agreement 14-12-0001-30387, U.S. Department of Interior, Minerals Management Service, Herndon, VA. 45 p.

Penniman, C.A. and L.G. Ward. 1990. Little Bay bathymetric chart. Final Report New Hampshire Office of State Planning, Coastal Program, Concord, NH.

Ward, L.G. 1989. Sedimentological characteristics of vibracores taken in sand and gravel deposits on the inner continental shelf of New Hampshire. Final Report Cooperative Agreement 14-12-0001-30316, U.S. Department of Interior, Minerals Management Service, Herndon, VA. 22 p.

Ward, L.G., M.S. Kearney and J.C. Stevenson. 1988. Assessment of marsh stability at the estuarine sanctuary site at Monie Bay, implications for management. Final Report U.S. Department of Commerce, NOAA, NOS, Office of Ocean and Coastal Resource Management, Sanctuary Program Division, Washington, D.C. 78 p.

Zarillo, G., L.G. Ward, and M.O. Hayes. 1985. An Illustrated History of Tidal Inlet Changes in South Carolina. Special publication by South Carolina Sea Grant Consortium, Charleston, S.C. 76 p.

Kearney, M.S., L.G. Ward, C.M. Cofta, G.R. Helz, and T.M. Church. 1985. Sedimentology, geochronology and trace metals in the Nanticoke and Choptank Rivers, Chesapeake Bay. University of Maryland Water Resources Research Center Technical Report Number 84, College Park. 94 p.

Boicourt, W.C. and L.G. Ward. 1984. Circulation and sediment transport in the Deep Trough region of Chesapeake Bay. Final Report Coastal Resources Division, Tidewater Administration, Maryland Department of Natural Resources, Annapolis, MD. 27 p.

Kana, T.W., L.G. Ward and H.M. Johnson. 1980. Suspended sediment and sand transport at Duck, North Carolina. Final Report Contract DACW72-M-0865, Coastal Engineering Research Center, U.S. Army Corps of Engineers, Fort Belvoir, Virginia. 75 p.

Ward, L.G., T.F. Moslow, M.O. Hayes and K. Finkelstein. 1980. Oil spill vulnerability, coastal morphology and sedimentation of outer Kenai Peninsula and Montague Island, Alaska. Final Report Contract RU-59, Offshore Continental Shelf Environmental Assessment Program (OCSEAP), Bureau of Land Management, Juneau, Alaska. 105 p.

Ward, L.G., and D.D. Domeracki. 1978. Physical and sedimentological processes in an intertidal salt marsh. Final Report South Carolina Wildlife and Marine Resources Dept., Charleston, South Carolina. 90 p.

Hubbard, D.K., L.G. Ward, D.M. FitzGerald and A.C. Hine. 1975. Bank margin morphology and sedimentation, Lucaya, Grand Bahama Island. Tech. Report. No. 7-CRD, Department of Geology, Univ. of South Carolina, Columbia, South Carolina, 36 p.

Nummedal, D., A.C. Hine, L.G. Ward, M.O. Hayes, J.C. Boothroyd, M.F. Stephen, and D.K. Hubbard. 1974. Recent migrations of the Skeidararsandur shoreline, southeast Iceland: Final Report Contract N60921-73-C-0258, Naval Ordnance Laboratory, Washington, D.C. 183 p.

SERVICE TO THE SCIENTIFIC COMMUNITY

Editorial Board

Estuarine Coastal and Shelf Science (from October, 1998 to present)

Guest Editing of a Journal

Ward, L.G. and G.M. Ashley (Guest editors). 1989. Physical processes and sedimentology of siliciclastic-dominated lagoonal systems. *Marine Geology*, volume 88.

Reviewer for Journals (Partial Listing)

Estuarine Coast and Shelf Science, Estuaries and Coasts, Journal of Coastal Research, Journal of Sedimentary Research, Marine Geology, Sedimentology, Geotimes, Geology

Reviewer for Funding Agencies (Partial Listing)

National Science Foundation, American Geophysical Union, Hudson River Foundation, National Estuarine Research Reserve System, NOAA - National Sea Grant Program, NOAA - State Sea Grant Programs – Hawaii, New York, Louisiana, Massachusetts Institute of Technology, North Carolina, Rhode Island, and Woods Hole Oceanographic Institute, National Park Service, NURP (at the University of North Carolina and at Rutgers), Natural Environment Research Council (Great Britain Funding Agency), U.S. Department of Energy, U.S. Environmental Protection Agency

Meetings and Symposia Organized For Professional Meetings

"Physical Processes in Siliciclastic Back-Barrier Lagoons" (co-chaired with G.M. Ashley). Special symposium held during the Society of Economic Paleontologists and Mineralogist

(SEPM) Annual Mid-Year Meeting. September 26-28, 1986. Raleigh, North Carolina.

"Geologic Processes in Estuaries". Special symposium held during the Atlantic Estuarine Research Society (AERS) Annual Meeting. April 11-13, 1985. Gloucester Point, Virginia.

Tenth Annual Middle-Atlantic Bight Physical Oceanography and Meteorology (MABPOM) Workshop. Organized and co-chaired conference. Oct. 20-21, 1982. Easton, Maryland.

Advisory/Professional Committees - Recent

State of New Hampshire Committee to Study the Causes, Effects, and Remediation of Siltation in the Great Bay Estuary (House Bill 216) (August 2007 to present)

Wells Scientific Review Panel (2001 to Present)

Wells National Estuarine Research Reserve Science Advisory Committee (1991 to 2003).

State of Maine - Coastal Nutrient Enrichment Advisory Group (1994 to 1996).

Audubon Society of New Hampshire - Steering Committee for the Development of a Method for the Evaluation of Coastal Wetlands (1992 to 1993).

TEACHING AND TRAINING

COURSES TAUGHT

<u>Title</u>	<u>Campus</u>	<u>Date (Enrollment)</u>
Nearshore Processes (ESCI796/896 - 4 credits)	Univ. New Hampshire @Durham	Spring, 2008 (7) Spring, 2002 (5) Spring, 2001 (6) Spring, 2000 (10) Spring, 1999 (6) Spring, 1997 (14)
Estuarine Sedimentological Processes (ESCI796/896 – 3 credits)		Fall, 2007 (1)
Introduction to Sedimentology (ESCI595 – 4 credits)	Univ. of New Hampshire @Durham	Fall, 2003 (5)
Introduction to Oceanography (15) (ESCI501 – 4 credits)	Univ. New Hampshire @Durham	Summer, 2002

Introduction to Physical Geology (ESCI401 - 4 credits)	Univ. New Hampshire @Durham	Summer, 1997 (10) Summer, 1996 (15) Summer, 1995 (15)
Beaches and Coasts (ESCI405 - 1 credit)	Univ. New Hampshire @Durham	Summer, 1990 (17) Spring, 1989 (17)
Physics and Geology of Marine Systems (3 credits)	Univ. of Maryland @College Park	Fall, 1985 (20) Fall, 1984 (15) Fall, 1983 (13)
Estuarine Sedimentological Processes (3 credits)	Univ. of Maryland @Horn Point	Summer, 1984 (3)
Seminar in Coastal Systems (3 credits)	Univ. of Maryland @Horn Point	Summer, 1983 (12)
Coastal Geomorphology (3 credits)	Univ. of Maryland @Horn Point	Summer, 1981 (11)
Introduction to Sediments and Sedimentary Rocks (3 credits)	Univ. South Carolina @Columbia	Spring, 1980 (25)
Introductory Physical Geology (4 credits)	Univ. South Carolina @Columbia	Fall, 1979 (125)
Introductory Environmental Geology (4 credits)	Univ. South Carolina @Columbia	Spring, 1978 (225)

GRADUATE STUDENT TRAINING

Students at the University of New Hampshire

Major Professor (In Progress)

Jeffrey Rogers (PhD in NREES)

Janice Felzenberg (M.S. in Earth Sciences)

Major Professor (Completed)

Edward Merchant (M.S. in Earth Sciences, UNH, Spring, 2003, Non-thesis Option with Directed Research Project), Observations on the Sedimentology of the Intertidal Shoals of Hampton/Seabrook Harbor, New Hampshire.

Michael Leo (M.S. in Earth Sciences, UNH, Summer, 2000), The Geomorphology, Sedimentology, and Storm Response of Beaches Along the Glaciated Coast of the Western Gulf of Maine (New Hampshire and Southwestern Maine).

Brent Zaprowski (M.S. in Earth Sciences, UNH, Summer, 1998), The Geological and Climatic History of a Salt Marsh along the Squamscott River, Southeastern New Hampshire.
Kevin Trainer (M.S. in Earth Sciences, UNH, Summer, 1997), Stratigraphy and Evolution of the Tidal Marshes on the Great Bay and Squamscott River, New Hampshire.

Graduate Student Thesis Committee Member (Completed)

Lynnette Morgan (M.S. in Earth Sciences, Winter 2007)
Luis Rosa (M.S. in Earth Sciences, Summer 2007)
Michael Eller (M.S. in Earth Sciences, Fall 2005)
Randy Cutter (PhD in Earth Sciences, Spring 2005)
Jason Ericson (M.S. in Earth Sciences, Spring 2004)
Catherine Bozek (M.S. in Natural Resources, Fall 2003)
Antony Hewitt (Ph.D. in Earth Sciences, Spring 2002)
Melissa Brodeur (M.S. in Earth Sciences, Spring 2002)
Stephanie Getchell (M.S. in Earth Sciences, Spring, 2001)
Zhitao Yu (M.S. in Earth Sciences, Spring 2001)
Emily Banks (M.S. in Earth Sciences, Spring, 1999)
Kenneth Jacobs (M.S. in Earth Sciences, Spring, 1999)
Oleg Pinous (Ph.D. in Earth Sciences, Spring, 1997)
Monica Webster (M.S. in Earth Sciences, Spring, 1991)

Graduate Student Thesis Committee Member (In Progress)

Students from Other Universities

Major Professor

Stephen Howie (M.S. in MEES, UMCP, Spring, 1986), Sedimentary Processes and Stratigraphy of an Estuarine Tributary, Chesapeake Bay.

Graduate Student Thesis Committee Member - Boston University

Ching-Huei Kuo (Ph.D. in Earth Sciences, Summer, 1997)

Graduate Student Thesis Committee Member - University of Maryland

Kevin M. Morrisey (M.S. in MEES, 1989)
Lesley Smith-Morrill (Ph.D. in MEES, 1987)
David R. Sager (Ph.D. in MEES, 1986)
Joseph Dineen (Ph.D. in MEES, 1986)
Kenneth Staver (M.S. in MEES, 1984)
Robert McConnaughey (M.S. in MEES, 1983)

Graduate Student Thesis Committee Member - University of South Carolina

Daniel Domeracki (M.S. in Geology, 1982)
Michael F. Stephen (Ph.D. in Geology, 1981)
Robert Tye (M.S. in Geology, 1981)

Mohammad Al-Sarawi (Ph.D. in Geology, 1980)
Peter J. Reinhart (M.S. in Geology, 1980)
Craig Shipp (M.S. in Geology, 1980)

GRANTS AND CONTRACTS

Presently Active

Development and Analyses of a Bathymetric Database for Great Bay Estuary. September 1, 2008 to June 30, 2009. Funded by New Hampshire Department of Environmental Service, Coastal Program - \$30,002 (Larry G. Ward)

Past

University of New Hampshire Environmental Monitoring Project (for the Open Ocean Aquaculture Program). September 2007 to August 2008. Funded by UNH/NOAA AMAC - \$112,500 (Larry G. Ward, Raymond Grizzle and James Irish). Funding Directly to Ward - \$37,500.

Assessment of Sand Resources and the Geological Environment of the New Hampshire Inner Continental Shelf (Cooperative Agreement Between the University of New Hampshire and the Minerals Management Service). Year 2 of 5 Year Agreement, April 2005 to June 2008. Funded by U.S. DOI Minerals Management Service - \$40,000 (Larry G. Ward and David Wunsch).

University of New Hampshire Environmental Monitoring Project (for the Open Ocean Aquaculture Program). September 2006 to August 2007. Funded by UNH/NOAA CINEMar - \$150,000 (Larry G. Ward, Raymond Grizzle and James Irish). Funding Directly to Ward - \$50,000.

University of New Hampshire Environmental Monitoring Project (for the Open Ocean Aquaculture Program). September 2005 to August 2006. Funded by UNH/NOAA CINEMar - \$157,000 (Larry G. Ward, Raymond Grizzle and James Irish). Funding Directly to Ward - \$50,000.

Mapping and Characterizing Groundfish Nursery Habitat. September 2005 to August 2006. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar) - \$53,005 (Larry Ward). Part of "Monitoring Marine Protected Areas: An Intensive Study of the Western Gulf of Maine Closure Area.

Field Investigation to Support Hydrodynamic and Sediment Transport Numerical Models of the Channel Cut Fill Project in Seabrook Harbor, New Hampshire. May 2005 to December 2005. Funded by the U.S. Army Corps of Engineers - \$198,040 (Larry G. Ward).

Mapping and Characterizing Groundfish Nursery Habitat. September 2004 to August 2005. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar) - \$168,482 (Raymond Grizzle and Larry Ward). Part of "Monitoring Marine

Protected Areas: An Intensive Study of the Western Gulf of Maine Closure Area. September 2004 to August 2005.

University of New Hampshire Environmental Monitoring Project (for the Open Ocean Aquaculture Program). September 2004 to August 2005. Funded by UNH/NOAA CINEMar - \$150,000 (Larry G. Ward, Raymond Grizzle and David Fredriksson). Funding Directly to Ward - \$50,000.

Assessment of Sand Resources and the Geological Environment of the New Hampshire Inner Continental Shelf (Cooperative Agreement Between the University of New Hampshire and the Minerals Management Service). Year 1 of 5 Year Agreement, April 2004 to March 2005. Funded by U.S. DOI Minerals Management Service - \$40,000 (Larry G. Ward and David Wunsch).

University of New Hampshire Environmental Monitoring Project (for the Open Ocean Aquaculture Program). September 2003 to August, 2004. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar) - \$149,856 (Larry G. Ward, Raymond Grizzle and David Fredriksson). Funding Directly to Ward - \$50,000.

Intensive Study of the Western Gulf of Maine Closure Area. September 2003 to August 2004. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar) - \$172,037 (Raymond Grizzle and Larry Ward). Part of "Monitoring Marine Protected Areas: An Intensive Study of the Western Gulf of Maine Closure Area. September 2003 to August 2004.

Environmental Monitoring for the University of New Hampshire Open Ocean Aquaculture Demonstration Project. September 2002 to August, 2003. Funded by UNH/NOAA CINEMar - \$149,924 (Larry G. Ward, Raymond Grizzle and David Fredriksson). Funding Directly to Ward - \$50,000.

Intensive Study of the Western Gulf of Maine Closure Area. September 2002 to August 2003. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar) - \$147,477 (Raymond Grizzle and Larry Ward). Part of "Monitoring Marine Protected Areas: An Intensive Study of the Western Gulf of Maine Closure Area.

Environmental Monitoring for the University of New Hampshire Open Ocean Aquaculture Demonstration Project. September 2001 to August, 2002. Funded by UNH/NOAA CINEMar - \$146,896 (Larry G. Ward, Raymond Grizzle and David Fredriksson). Funding Directly to Ward - \$50,000.

Estuarine Responses of Dredging at Wells National Estuarine Research Reserve (Extension). October, 2001 - September, 2002. Funded by NOAA/UNH Co-operative Institute for Coastal and Estuarine Technology (CICEET) to Wells NERR, Subcontracted to UNH - \$21,112 (Larry G. Ward and David Burdick).

An Integrated Multi-Habitat Restoration of South Mill Pond to Improve Fisheries and Water Quality in Portsmouth, NH. October 2000 to March 2002. Funded by NOAA Restoration Center, National Marine Fisheries Services - \$50,000 (David Burdick, Raymond Grizzle and Larry Ward).

Estuarine Responses of Dredging at Wells National Estuarine Research Reserve. October, 1998 - September, 2001. Funded by NOAA/UNH Co-operative Institute for Coastal and Estuarine Technology (CICEET) to Wells NERR, Subcontracted to UNH - \$52,283 (David Burdick and Larry G. Ward).

Suspended Particle Inputs to the Great Bay Estuary. June 2000 to July 2001. Funded by the UNH Hubbard Endowment - \$4,500 (Larry G. Ward and Frank L. Bub).

NH Sea Level Rise Study. September 2000 to June 2001. Funded by the NH Coastal Program - \$17,282 (Larry G. Ward).

Open Ocean Aquaculture Demonstration Project - Site Selection, Permits and Monitoring. June, 1998 - May, 2000. Funded by NOAA - \$200,000 (Larry G. Ward, Richard Langan and Frank L. Bub).

The Development and Implementation of an Estuarine Contaminant Status and Forecast System: The Modeling Component. August, 1999 - July, 2000. Funded by NOAA/UNH Co-operative Institute for Coastal and Estuarine Technology (CICEET) - \$260,000 (Wendell S. Brown, Barbaros Celikkol, M. Robinson Swift, Frank L. Bub and Larry G. Ward)

Hampton Seabrook Harbor Study. November, 1998 - December, 1999. Funded by the New Hampshire Coastal Program - \$35,000 (Barbaros Celikkol and Larry G. Ward).

Sediment Dynamics in the Great Bay/Piscataqua River Estuary. July, 1997 - August 1999. Funded by NOAA/UNH Co-operative Institute for Coastal and Estuarine Technology (CICEET) - \$60,000 (Larry G. Ward)

Open Ocean Aquaculture Demonstration Project - Site Selection, Permits and Monitoring. September, 1997 - June, 1998. Funded by NOAA - \$53,000 (Larry G. Ward, Richard Langan and Frank L. Bub).

Development of an Innovative Lecture/Field Course in Coastal and Nearshore Processes to Enhance the Earth Sciences Oceanography Major and Offer New Research Opportunities for Students. January, 1997 - June 1997 Funded by the University of New Hampshire Marine Program Hubbard Endowment - \$19,070 (Larry G. Ward and Frank L. Bub).

Determination of Loss or Degradation of Wetland Habitats in Northern New England Utilizing Remote Sensing (Condition and Change Analysis): Refinement of Methodologies, Application to Study Sites in New Hampshire and Publication of Results. July, 1995 to June, 1996. Funded by the United States Geological Survey through the New Hampshire Water Resources Research

Center - Total project = \$26,944 (Larry G. Ward).

Work Plan Preparation/Field Sampling Services in Support of CTO No. 201 - Offshore Feasibility Study, Portsmouth Naval Shipyard, Kittery, Maine. 1996 Partial funding of pending proposal from the United States Navy via a subcontract with Halliburton NUS - \$53,750 (F. Short, L. Ward, D. Burdick, R. Langan and S. Jones).

Surficial Sediment Distribution Map of the Inner Continental Shelf of Southern New Hampshire Based on Existing Geophysical Data and New Sediment Samples. January, 1994 - December, 1995. Funded by the Department of Interior Minerals Management Service - \$16,540 (Larry G. Ward and Francis S. Birch).

A Seafloor Atlas of the Inner Continental Shelf of the Western Gulf of Maine. September, 1994 - August, 1995. Funded by the National Oceanic and Atmospheric Administration, Regional Research Program for the Gulf Of Maine - Total project = \$138,759 to the University of Maine, \$9,256 subcontracted to UNH (Larry G. Ward).

Synthesis of Sedimentary Data from the Great Bay and Piscataqua Estuary. April, 1994 - December, 1994. Funded by the United States Navy - \$14,850 (Larry G. Ward).

Contaminated Sediment Database for the Gulf of Maine. October, 1994 - September, 1994. Funded by the National Oceanic and Atmospheric Administration, Regional Research Program for the Gulf of Maine - Total project = \$200,009 to U.S. Geological Survey at Woods Hole, \$21,011 subcontracted to UNH (Stephen H. Jones and Larry G. Ward).

Coring at Outer Cutts Cove. March, 1994 - September, 1994. Funded by the New Hampshire Port Authority - \$11,499 (Larry G. Ward).

Research Supporting an Environmental Risk Assessment of the Portsmouth Naval Shipyard, Phase II. July, 1992 - April, 1994. Funded by the United States Navy - \$387,200 (F. Short, L. Ward, R. Langan, D. Burdick, B. Celikkol and R. Swift).

A Study of Surface Water and Groundwater Discharges to Wells National Estuarine Research Reserve. October, 1993 - January, 1994. Funded by the Institute of Museum Services (subcontracted through Wells Reserve) - \$7,497 (Larry G. Ward).

Fate of Sediments and Associated Fecal-Borne Microorganisms Entering Great Bay. July, 1992 - June, 1993. Funded by the United States Geological Survey, University of New Hampshire Water Resources Research Center - \$36,801 (Stephen H. Jones, Larry G. Ward and Richard Langan).

Subbottom Seismic, Side Scan Sonar and Bathymetric Survey of the Inner Continental Shelf of Southern New Hampshire. March, 1992 - June, 1993. Funded by the Department of Interior Minerals Management Service - \$21,795 (Larry G. Ward, Francis S. Birch, Franz E. Anderson and Eugene L. Boudette).

Research Supporting an Environmental Risk Assessment of the Portsmouth Naval Shipyard. January, 1992 - September, 1992. Funded by the Environmental Protection Agency - \$109,837 (F. Short, S. Jones, L. Ward, A. Mathieson, D. Burdick, B. Celikkol and R. Swift).

A Study of Surface Water and Groundwater Discharges to Wells National Estuarine Reserve, Wells, Maine. July, 1991 - June, 1992. Funded by National Oceanic and Atmospheric Administration, National Ocean Survey, National Estuarine Research Reserve System) (Subcontracted through Wells Reserve) - \$7,616 (Larry G. Ward).

Aerial Photographic Survey and Mapping of the Tidal Wetlands within the Great Bay Estuary System, NH: The Piscataqua, Bellamy, Cocheco and Salmon Falls Rivers. July, 1991 - June, 1992. Funded by funded by the National Oceanic and Atmospheric Administration through the New Hampshire Coastal Program - \$48,749 (Larry G. Ward and Arthur C. Mathieson).

Transport and Fate of Microbial Contaminants and Suspended Sediments in the Great Bay: Effects on Water Quality and Management Implications. July, 1991 - June, 1992. Funded by the United States Geological Survey, University of New Hampshire Water Resources Research Center - \$39,000 (Stephen H. Jones, Richard Langan, Frederick Short and Larry G. Ward)

Portsmouth Naval Shipyard Environmental Risk Assessment Support. August, 1991 - December, 1991. Funded by SAIC/EPA - \$254,420 (F. Short, S. Jones, L. Ward, A. Mathieson, D. Burdick, B. Celikkol and R. Swift).

Review and Synthesis of Research and Literature Relating to the Geologic Environment of the New Hampshire Coast and Continental Shelf. November, 1990 - December, 1991. Funded by Department of Interior, Minerals Management Service - \$13,440 (Eugene L. Boudette and Larry G. Ward).

Initiation of Research of the Coastal Geomorphology, Sedimentology and Depositional Processes Along the New Hampshire Coast. October, 1990 - July, 1991. Funded by University of New Hampshire/ Maine Sea Grant Program - \$8,500 (Larry G. Ward)

Aerial Photographic Survey of the Tidal Wetlands of the Great Bay Estuary, N.H. July, 1990 - June, 1991. Funded by funded by the National Oceanic and Atmospheric Administration through the New Hampshire Coastal Program - \$38,732 (Larry G. Ward and Arthur C. Mathieson).

Hydrology and Salinity Characteristics of Wells National Estuarine Research Reserve. October, 1989 - March, 1991. Funded by National Oceanic and Atmospheric Administration, National Ocean Service, National Estuarine Research Reserve System - \$34,999 (Larry G. Ward and Clayton A. Penniman).

Pilot Study to Evaluate the Sedimentary Environment of an Offshore Aggregate Deposit on the Inner Continental Shelf of New Hampshire. June, 1989 - December, 1989. Funded by U.S.

Department of Interior, Minerals Management Service - \$15,130 (Larry G. Ward and Eugene L. Boudette).

Development of a Detailed Bathymetric Chart of Little Bay. October, 1989 - June, 1990. Funded by NH Coastal Zone Management Program - 43,818 (Clayton A. Penniman and Larry G. Ward).

Development Project. January, 1989 - June, 1989. Funded by The University of New Hampshire/University Maine Sea Grant Program - \$8,166 (Larry G. Ward).

Toxic Metals Deposition in Sediments of Maryland Reservoirs and Chesapeake Bay: Impact on Water Supplies and Habitat Quality. May, 1988 - April 1989. Funded by United States Geological Survey, University of Maryland Water Resources Research Center - \$26,935 (Jeffrey C. Cornwell and Larry G. Ward).

Assessment of Marsh Stability and Historic Changes in Salinity at the Estuarine Sanctuary Site in Maryland: Implications for Management and Future Effects on Fisheries. March, 1986 - August, 1987. Funded by Maryland Department of Natural Resources (\$65,692) and Maryland Water Resources Research Center (\$8,000), Total Amount - \$73,692 (Larry G. Ward, J. Court Stevenson and Michael S. Kearney).

Assessment of Marsh Stability at the Estuarine Sanctuary Site at Monie Bay, Maryland. February, 1987 - October, 1987. Funded by National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, Marine and Estuarine Management Division - \$16,000 (Larry G. Ward, J. Court Stevenson and Michael S. Kearney).

Benthic Animal-Sediment Assessment of Maryland: Coastal Waters from the Maryland-Delaware State Line to Ocean City Inlet. April 1986 - December 1987. Funded by Maryland Department of Natural Resources - \$127,658 (J.A. Mihursky and Larry G. Ward).

Accumulation of Toxic Metals in the Sediments of Eastern Shore Rivers, Implications for Water Quality. August 1984 - September 1985. Funded by the United States Geological Survey, University of Maryland Water Resources Research Center - \$28,850 (Larry G. Ward and Michael S. Kearney).

Nitrogen cycling in the water column and sediments of a reef environment. February 1985 - December 1985. Funded by National Ocean and Atmospheric Administration, National Undersea Research Program (Hydrolab) - \$7,000 (Thomas R. Fisher, Robert R. Twilley, Larry G. Ward and Chris F. D'Elia).

Accumulation of Toxic Metals in Wetland Areas of Two Eastern Shore Rivers, Implications for Water Quality. August 1983 - July 1984. Funded by the United States Geological Survey, University of Maryland Water Resources Research Center - \$28,794 (Larry G. Ward and Michael S. Kearney).

Circulation and Sediment Transport in the Deep Trough Region of Chesapeake Bay. March 1983 - August 1983. Funded by Maryland Department of Natural Resources - \$19,785 (William C. Boicourt and Larry G. Ward).

Middle Atlantic Bight Physical Oceanography and Meteorology Workshop. September 1982 - December 1982. Funded by National Oceanic and Atmospheric Administration - \$2,000 (Larry G. Ward).

Co-operate Research Proposal to Study Beach Erosion at Hunting Island State Park, Beauford County, South Carolina. September 1979 - August 1980. Funded by South Carolina Department of Parks, Recreation and Tourism - \$34,968 (Miles O. Hayes and Larry G. Ward).

Stability of Navigational Channels and Shoaling in Sound Entrances, Southern Half of the South Carolina Coast. July 1979 - June 1980. Funded by South Carolina State Sea Grant - \$31,000 (Miles O. Hayes and Larry G. Ward).

Physical and Sedimentological Processes in an Intertidal Salt Marsh. August 1977 - July 1978. Funded by National Science Foundation - \$1,380 (Larry G. Ward).

Physical and Sedimentological Processes in an Intertidal Salt Marsh. March 1977 - February 1978. Funded by South Carolina Wildlife and Marine Resources - \$8,025 (Larry G. Ward).