

Michael J. Marshall, Ph.D.

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Education

1985	Ph.D. (Zoology) , University of Florida, Gainesville. Dissertation advisor: Frank
Maturo, Dissertation:	
1978	Coral Reef Ecology Course (summer curriculum) University of the West Indies, Discovery Bay, Jamaica
1977	MS (Zoology) , University of Florida, Gainesville <i>Thesis advisor: Frank Maturo.</i> <i>Thesis:</i> Serologically detected patterns of gastropod predation on an intertidal oyster bar, Cedar Keys, Florida.
1972	BA (Biology, with honors) , University of South Florida, Tampa, Florida

Biographical Sketch

Dr. Marshall's experience in Latin America has centered on research needs for coastal zone management issues including oil spill impacts on seagrass bed associated fauna, protected area design and resource surveys, port impact assessments, mining impacts, habitat restoration, and fisheries research. He has lived and worked in Colombia, Panama, Honduras and Nicaragua.

He was Scientist-in-Charge for the Bahia Las Minas Oil Spill Project at the Smithsonian Tropical Research Institute in the Republic of Panama from 1986 to the end of the project in 1993. This project focused on the impact of the oil spill on benthic communities (plants, fish, infauna, and epifauna) within seagrass meadows. He also surveyed coral reefs for signs of oil damage during the initial six months of the MMS project in Panama. In 1989, he was a Presidential Task Force Witness to oil damage to seagrass meadows in Panama.

He recently (1992-1996) surveyed estuarine fish communities in mangrove dominated coastal lagoons and the extensive seagrass meadows of the Miskito Coast of Nicaragua. This work served as part of a resource inventory for the newly established Miskito Coast Protected Area and was completed under a contract with the U.S. Agency for International Development through Tropical Research and Development (Gainesville, FL). In 1993-94 he and a team of Colombian scientists completed a biodiversity assessment (including mangroves, invertebrates, fish, and avifauna) of healthy and dead mangrove forests within the Cienaga Grande, Colombia, as a baseline study for the ongoing attempt to restore the mangrove forests of the Cienaga Grande. He also completed a survey of seagrass meadows at the Atlantic and Pacific entrances to the Panama Canal, prior to possible new work on canal structures. This project was funded by the Interamerican Development Bank and was managed by the University of Panama and ANCON (a Panamanian NGO).

In Honduras, during July 1997, Dr. Marshall completed a rapid ecological assessment of a mostly mangrove protected area at Punta Izopo near Tela for Wildlife Conservation International. In 1998 he surveyed the

marine and estuarine areas of the Jeanette Kawas National Park, Honduras, for WCS. This area includes mangrove forest, a mixed species tropical wetland forest, and an estuary.

In Florida Dr. Marshall, through the Coastal Seas Consortium, Inc., has been under contract to Lewis Environmental Services, Inc., since May 1996, to provide consulting services in support of several projects.

These projects include 1) planning and supervising onsite channel construction, monitoring plant growth and ground water elevations and salinities at a mangrove restoration site within Clam Bay, Naples, Florida; 2) surveying and mapping seagrasses and mangroves, transplanting mangroves and seagrasses, and monitoring the success of this effort at the site of a new port to be constructed near Guayama, Puerto Rico for AES/Puerto Rico; 3) providing benthic sorting services for a long-term monitoring project at the Cargill/Gardinier chemical plant on Tampa Bay; and 4) transplanting and monitoring seagrass at Port Manatee; and 5) translating various LES documents from English to Spanish.

At Mote Marine Laboratory he conducted numerous studies of the coastal ecosystems of Florida including an assessment of marsh and mangrove changes in response to freshwater withdrawals from the Manatee River.

Dr. Marshall served on the Technical Advisory Committee (TAC) on water quality problems for the Florida Keys National Marine Sanctuary Program. He also serves on the Technical Advisory Committees of the Sarasota Bay and the Charlotte Harbor National Estuary Programs.

Mike Marshall and Mr. Robin Lewis (Lewis Environmental Services, Inc.) were contracted by the United Nations Development Program's Sabana Camaguey Archipelago project (Cuba) in 2001 and 2003 to teach two courses on mangrove and seagrass restoration.

Mike is involved in a new project, starting in February 2003, to survey and document the status of the marine portions of three protected areas in Nicaragua. This work will be conducted under a contract with the Wildlife Conservation Society, Vega Environmental, and BRLi (a Paris-based) consulting firm.

Teaching Experience Summary

1998 Ecology)	Contracted to teach two courses (Marine Conservation Biology and Estuarine Ecology) at the Oregon Institute of Marine Biology, Charleston, Oregon. Course dates were March 30 through August 15, 1998.
1995-1996	Established and organized field courses for Mote Marine Laboratory to be taught at MML's Pigeon Key Research Center in the Florida Keys.
1985-1987	General Biology, Oceanography and Algebra I Florida State University, Panama Canal Branch Campus
1974-1984	Graduate Teaching Assistant in Zoology Courses Taught: General Biology, Invertebrate Zoology and Marine Biology, University of Florida, Florida

Present Employment and Appointments

President/Marine Ecologist, Coastal Seas Consortium, Inc, Bradenton, Florida. (1998 to present).

University of Florida, Adjunct Assistant Professor, Zoology Department (1998-present).

Consulting Senior Ecologist, Lewis Environmental Services, Inc., P.O. Box 20005, Tampa, Florida 33622-0005 (since May 1996).

Employment History

Florida State University Panama Canal Branch, Albrook AFB, Panama, Republica de Panama. Assistant Professor of Biology (1985-1986). Left to work at the Smithsonian Tropical Research Institute.

Smithsonian Tropical Research Institute, Balboa, Republica de Panama. Scientist in charge of the seagrass subproject, Bahia Las Minas oil spill project (1986-1993). Project fully completed in 1993. Contact person: Mr. Luis D'Croz, Smithsonian Tropical Research Institute., DCROZI@naos.si.edu.

University of Florida, Adjunct Assistant Professor, Zoology Department. Continued work on Panama oil spill project for the Smithsonian Tropical Research Institute (1988-1989).

Continental Shelf Associates, Inc., Jupiter, Florida. Senior Scientist. Continued work on Panama oil spill project for the Smithsonian and worked on numerous projects, including oil lease surveys on the continental shelf, fisheries impact assessments, etc.) for Continental Shelf (1989-1991).

Mote Marine Laboratory, Sarasota, Florida. Staff Scientist. Completed work on the Smithsonian oil spill project and worked on many other projects concerning coastal zone management issues in southwest Florida and in Latin America (1991-1996).

Languages Spoken

English (native) and Spanish

Honors, Societies, etc.

Society of Wetland Scientists, Member International Committee.
Estuarine Research Federation.

Florida Academy of Science, Councilor-at-large, 1992-1994.

University of Florida Marine Laboratory Fellowship 1985

Member, *Sigma Xi*, University of Florida

Cum laude graduate in Biology, University of South Florida, 1972

Member, *Phi Kappa Phi* Honorary Society, University of South Florida

Association of Marine Laboratories
Friends of the Everglades
Partners of the Americas

Projects (Current and Completed)

Preparation of Management plans for three protected areas on Nicaragua's Caribbean coast. Dr. Marshall was contracted by WCS/BRLI/ Vega Environmental to evaluate the marine portions of three protected areas with the Paseo Pantera chain of protected areas. Contact person Dr. Archie Carr III, acarriii@aol.com, Phone 352-

United Nations Development Program's Sabana Camaguey Archipelago project

Dr. Marshall was contracted by the UNDP's Sabana Camaguey Archipelago project (Cuba) in 2001 and 2003 to teach two courses on mangrove and seagrass restoration. Project manager: Aida Caridad Hernandez Zany , aidah@oceano.inf.cu, Phone: 2710300, Fax 537-339112.

U. S. Fish and Wildlife Service (subcontract with LES, Inc.) USFWS contact Paul Tritaik Paul.tritaik@fws.gov, phone 561-562-3909. Restoration of mangroves and marshes at the Pelican Island National Wildlife Refuge, Sebastian, Florida. 2000- 2001 through present. Supervised helicopter drops of fossilized oyster shell around perimeter of island to construct an oyster bar. Managed work crews to re-inforce oyster shell barrier. Planted Spartina and mangroves to stabilize eroding shoreline. Prepared reports and power point presentations.

CoSeagrass survey in the vicinity of Pelican Island National Wildlife Refuge, **Indian River Lagoon, Florida** (summer 2001) – LES contracted to Taylor Engineering, Jacksonville, Fl. Contact person Roy R. Lewis III, lesr13@aol.com, 888-889-9684

Florida Power Corporation Crystal River Plant 2001, Contact Person David Bruzek, 727-826-4134.

Resurvey of discharge area of the Crystal River Fossil Fuel and Nuclear power plants. Checked to see if seagrasses had recovered in the area after Florida Power constructed "helper" cooling towers on the discharge canal. A follow-up of the Mote Marine Lab 1993-1994 study (see below). Supervised by David Bruzek,

Manatee County Port Authority (subcontract with LES, Inc.)

Seagrass mitigation project at **Port Manatee, Florida**. Planted bare root seagrasses and monitored the success of the initial phases of the seagrass mitigation project and the success of mechanical seagrass planting machines Wetland delineation project at the Port Manatee, Florida, expansion site.

Cargill, Inc. (subcontract with LES, Inc.)

Roy R., Lewis III, lesrri3@aol.com 888-889-9684 or 813-505-3999

Benthic surveys (1994 through 1998) for Cargill Fertilizer at a plant on **Tampa Bay**.

Pelican Bay Services Division – Collier County Government (subcontract with LES, Inc.) – 1995 through present. (2003).

Construction supervisor for a mangrove forest restoration project at **Clam Bay, Naples, Florida**. For Pelican Bay Services, Inc. Design and staking of Phases II and III of the mangrove forest restoration project at Clam Bay, Florida. Construction supervision of Phases II and III of the mangrove forest restoration project at Clam Bay, Naples, Florida. Contact Person: Mr. Kyle Lukasz, kylelukasz@colliernet.gov Phone: 239-597-2265.

Oregon Institute of Marine Biology -1998

Taught estuarine biology and marine biodiversity at the **Oregon Institute of Marine Biology** for their spring and summer semesters.

Wildlife Conservation Society 1997-2000 (CSC contracts)

Rapid ecological assessment of a protected area at **Jeanette Kawas (Punta Sal) National Park near Tela, Honduras**. For Wildlife Conservation International and PROLANSATE (a Honduran Non-governmental Organization). Mangrove damage survey near Trujillo, Honduras, for the Wildlife Conservation Society, Gainesville, Florida Regional Office (July 2000). Rapid ecological assessment of a protected area at Punta Izopo near Tela, Honduras. For Wildlife Conservation International and PROLANSATE (a Honduran NGO) (1997) Contact person: Dr. Archie Carr III, WCS, ACARRIII@aol.com, 352-371-1713.

1994-1996

Survey of coral reef, estuarine and near shore fisheries within the **Miskito Coast Protected Area, Nicaragua**. Funded by the U.S. Agency for International Development through the Caribbean Conservation Corporation. Dr. Jeanne Mortimer, jmort@nersp.nerdc.ufl.edu

AES Puerto Rico and Duke Fluor Daniels, Inc. (subcontract with LES, Inc.)

Seagrass bed and mangrove restoration project at a new port site, **Guayama, Puerto Rico**. Subcontracted by Lewis Environmental Services, Inc. for Flour Daniels, Inc. Participated in the Initial surveys and project design phase (1996). Supervised construction project from June 1- June 17, 1999. In charge of seagrass And mangrove mitigation monitoring and quarterly report preparation 1999 through present. Contact person, Lambert “Charlie” Dempster,, lambert.dempster@aes.com

Golder Associates, Inc. (subcontract with LES, Inc.)

Potential impacts of a port site and submarine tailings disposal on the coastal and estuarine ecosystems of the Central Caribbean coast of **Panama**. Golder/KBN Inc. Supervised by Michael Raine., mraine@golder.com

Mote Marine Lab Staff Scientist (1991-1996). Supervisor Dr. Ernest D. Estevez Estevez@mote.org
941-388-4441

Projects and dates:

1995

Identification of invertebrate and fish species in samples collected in **Florida Bay**, Everglades National Park. Funded by the U.S. National Biological Survey for Dr. Michael Robblee.

1994

Freshwater inflow alterations and their effects on habitats in the **Manatee River**.

1993-1994

Impacts of thermal cooling towers on seagrass distributions at **Crystal River, Florida**. Florida Power Corp.

1993

Preliminary study of the fauna of seagrass beds in **Sarasota Bay**. Sarasota Bay National Estuary Program.

Survey of hypoxic events over seagrass beds within **Sarasota Bay, Florida**. Sarasota Bay National Estuary Program.

Water quality and seagrass faunal sampling to determine the impact of the **Tampa Bay** oil spill.

Development of a recommended salinity regime for the **Sebastian River, Florida, St. Johns River Water** Management District.

1992

Survey of seagrass meadow communities in the **Miskito Cays area of Nicaragua**. Funded by U.S. AID/Liz Claiborne Foundation.

World Wildlife Fund Biodiversity Support Program project to demonstrate the impact of the loss of a large (50,000-hectare) mangrove forest on the biodiversity within the **Cienaga Grande de Santa Marta** estuary on the northern coast of Colombia, South America.

Pre-construction assessment of seagrass bed communities near the entrances of the **Panama Canal**. Project managed by the Universidad de Panama and ANCON (Asociacion Nacional para la Conservacion de la Naturaleza). June 1992-December 1992.

1991

Impacts of bait shrimpers on seagrass communities and fish populations in **Pine Island Sound**, funded by Florida Department of Natural Resources.

Impacts of shrimpers on fish populations in the **St. Johns River**, funded by Florida Department of Natural Resources.

Continental Shelf Associates, Inc. (Senior Scientist) 1988-1991

Projects that MJM worked on while at CSA:

Synthesis report on "The sensitivity of **south Florida** environments to oil spills and dispersants". Prepared for: U.S. Dept. of the Interior, Minerals Management Service.

Sediment sampling in **Mobile Bay**.

Beach surveys for stranded oil, **Prince William Sound**, Alaska. Arthur D. Little, Inc.

1989-1991

Five bottom surveys for offshore oil leases and preparation of EISs for these sites. Continental Shelf Associates, Inc.

Smithsonian Tropical Research Institute – 1988-1993

Contracted as "Scientist-in-charge" (a contracted position under the STRI/MMS oil spill project) of the seagrass subproject of the Bahia Las Minas oil spill project.

Studied the impacts and effects of the 1986 **Bahia Las Minas, Panama**, Oil Spill on Plants and Animals in Seagrass Communities. Project funded by the U.S. Dept. of the Interior, Minerals Management Service, Smithsonian Tropical Research Institute and the Marine Spill Response Corporation. Employed through end of contract. Authored chapters in several project related reports (see bibliography).

Employment (non-instructional) while at the University of Florida

1980-1984 Cultured organisms for bioassay tests – Environmental Science and Engineering. Supervised by Ms. Isabel Johnson.

1978

Turtle excluder device (TED) performance tests for the National Marine Fisheries Service. Project managed by Dr. Archie Carr, Sr. Based at Jekyll Island, GA

1977

Collected plankton samples on a three-week cruise for Dr. John Caldwell on the **Florida Middle Grounds** (MAFLA Program).

1974

Sorted benthic samples for a study of the thermal effects on benthic communities by Florida Power Corporation's Crystal River nuclear generator. Supervised by Dr. Samuel Snedeker.

Employment while at the University of South Florida.

1968 -1972

Laboratory and field assistant for a study of the impact of a red tide on the benthos of **Tampa Bay** for Drs. J.

Simon (U. South Florida) and D. Dauer (Old Dominion University).

USF Co-operative education student field and laboratory assistant for Dr. John L. Taylor and Mr. Carl Saloman at the **National Marine Fisheries Service Laboratory** on Pass-a-Grille Beach, St. Petersburg, Florida

Publications

Jameson, Stephen, Lamarr Trott, Michael Marshall, and Michael Childress (2000). Chapter 32, Nicaragua: Caribbean Coast. In: Charles R.C. Sheppard, Seas at the Millennium: An Environmental Evaluation, pages 517-530, Pergamon Press, Amsterdam.

Lewis, R.R. and M.J. Marshall (1997). Principles of successful restoration of shrimp aquaculture ponds back to mangrove forests. Programa/resumes de MarCuba 97, September 15/20, Palacio de Convenciones de la Habana, Cuba. Page 126.

Marshall, M.J., L. Botero, A. Santos-Martinez, P. Cardona, and M. Puyana 1993. Biodiversity associated with the living, dying, and dead mangrove forests of the Cienaga Grande de Santa Marta (CGSM), Caribbean Coast of Colombia Report to World Wide Fund for Nature, Ginebra, Suiza.

Estevez, E.D. and M.J. Marshall (1997). A landscape model assessing estuarine impacts of the freshwater inflow alterations. Proceedings Tampa BASIS 3, Sally F. Treat, editor.

Marshall, M.J. 1996. The applicability of predictions made from other oil spills to the 1986 Bahia Las Minas,

Panama, crude oil spill: seagrass communities, pp. 65-79, in C.E. Profitt and P.F. Roscigno. Eds.). 1996. Proceedings: Gulf of Mexico and Caribbean Oil Spills in Coastal Ecosystems: Analyzing Effects, Natural Recovery, and Progress in Remediation Research. OCS Study/MMS 95-0063. U.S. Department of the Interior,

Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. 245 pp.

Marshall, M.J, 1994. Los Pastos Marinos. El inventario biologico del Canal de Panama. I. El Estudio

Marino. *Scientia* (Panama), 8(2): 99-110.

Marshall, M.J., V. Batista, D. Matias. 1993. Effects of the 1986 Bahia Las Minas, Panama, Oil Spill on Plants and Animals in Seagrass Communities. Chapter 10. In: (B.D. Keller and J.B.C. Jackson, eds.) *Volume II: Technical Report, Long-term Assessment of the Oil Spill at Bahia Las Minas, Panama, and Synthesis Report*. OCS study MMS 93-0048. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Regional Office.

Marshall, M.J., V. Batista and D. Matias. 1991. Subtidal seagrass communities. In: (B.D. Keller and J.B.C. Jackson, Eds.) *Long-term Assessment of the Oil Spill at Bahia Las Minas, Panama*. OCS Study MMS 90-0030.

U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Regional Office, New Orleans.

Marshall, M.J., S.C. Snedaker and C.D. Getter. 1990. The sensitivity of south Florida environments to oil spills and dispersants. In: (Continental Shelf Associates, Inc.) *Synthesis of Available Biological Geological, Chemical, Socioeconomic and Cultural Resource Information for the South Florida Area*. Prepared for: U.S. Dept. of the Interior, Minerals Management Service, Atlantic OCS Region. MMS 90-0019.

Jackson, J.B.C., J.D. Cubit, B.D. Keller, V. Batista, K. Burns, H.M. Caffey, R.L. Caldwell, S.D. Garrity, C.D. Getter, C. Gonzalez, H.M. Guzman, K. W. Kaufman, A.H. Knap, S.C. Levings, M.J. Marshall, R. Steger, R.C. Thompson and E. Weil. 1989. Effects of a major oil spill on Panamanian coastal marine communities. *Science*. 243:37-44.

Cubit, J.D., C.D. Getter, J.B.C. Jackson, S.D. Garrity, H.M. Caffey and M. J. Marshall. 1987. An oil spill affecting coral reefs and mangroves on the Caribbean Coast of Panama. 1987 Oil Spill Conf., Paper 176.

Lindberg, W. and M. J. Marshall. 1984. Species profiles: life histories and environmental requirements (south Florida): the Stone Crab. U.S. Fish Wild. Serv. FWS/OBS-82/11. U.S. Army Corps of Engineers. TR EL-82-4.

Collins, M., M.J. Marshall and C.A. Lanciani. 1984. The distribution of *Poecilancistrum caryophyllum* (Trypanorhyncha) plerocercoids in spot, *Leiostomus xanthurus* Lacepede, and spotted seatrout, *Cynoscion nebulosus* (Cuvier). *J. Fish. Biol.* 25:63-68.

Reports and Abstracts

Lewis, R.R., III and Marshall, M.J. (2000). Clam Bay mangrove forest restoration project, time zero plus Three and four year reports. Prepared for Pelican Bay Services, Inc. by Lewis Environmental Services, Inc.

Lewis, R.R., III and Marshall, M.J. (1999). Clam Bay mangrove forest restoration project, time zero plus Two-year report. Prepared for Pelican Bay Services, Inc. by Lewis Environmental Services, Inc.

Lewis, R.R., III and Marshall, M.J. (1997). Clam Bay mangrove forest restoration project, time zero plus One-year report. Prepared for Pelican Bay Services, Inc. by Lewis Environmental Services, Inc.

Lewis, R.R., III and Marshall, M.J. (1997). Clam Bay mangrove forest restoration project, time zero report. Prepared for Pelican Bay Services, Inc. by Lewis Environmental Services, Inc.

Marshall, M.J. and R.R. Lewis, III (1997). Mangrove forest restoration project at Clam Bay, Naples, Florida - the first year. Presentation to the IV Congress on Marine Sciences, Havana, Cuba, September 1997.

Marshall, M.J. and R.R. Lewis, III (1997). Mangrove forest restoration project at Clam Bay, Naples, Florida - the first year. Presentation to the Association for Tropical Biology meeting in San Jose, Costa Rica, June 1997.

Marshall, M.J. (1996). Lagoon fish surveys in the Miskito Coast Protected Area. Report to the U.S. Agency for International Development, Environmental Initiative of the Americas Fisheries Project.

Marshall, M.J. (1996). Reef fish surveys of the Miskito Cays, within the Miskito Coast Protected Area. Final report to the U.S. Agency for International Development, Environmental Initiative of the Americas Fisheries Project.

Marshall, M.J. and J.R. Leverone. 1994. The distribution and effects of hypoxia on marine organisms in Sarasota Bay. Report to Sarasota Bay National Estuary Program.

Estevez, E.D. and M.J. Marshall. 1994. Impact of flow variations in the Manatee River. Task 3. Biological assessment of pre- and post-alteration flows and salinities. Report to Tampa Bay National Estuary Program.

Marshall, M.J. and L. Botero. 1993. Biodiversity surveys in the living and dead mangrove forests of the Ciénaga Grande de Santa Marta, Colombia. Final report to World Wildlife Fund's Biodiversity Support Program.

Marshall, M.J. 1993. Seagrass meadow surveys on the Caribbean Coast of Panama. Final report to the Consorcio de ANCON/Universidad de Panama.

Marshall, M.J., W. Ettish, and J. Leverone. 1993. Seagrass meadows of the Miskito Coast of Nicaragua. Final Report to the Caribbean Conservation Corporation.

Marshall, M.J. 1991. Effects of the 1986 Bahia Las Minas, Panama, Oil Spill on Seagrass Meadow Epifauna. 19th Annual Marine Benthic Ecology Meeting, Williamsburg, Virginia.

- Marshall, M.J. and E. Gundlach. 1990. The physical persistence of spilled oil: an analysis of oil spills previous to "Exxon Valdez". Hazardous Materials Response Branch, Ocean Assessments Division, Office of Oceanography and Marine Assessment, National Oceanographic and Atmospheric Administration, Seattle, Washington.
- Marshall, M.J. 1990. Algal turfs. In: (Continental Shelf Associates, Inc.) *A Comparison of Marine Productivity Among Outer Continental Shelf Planning Areas*. Prepared for: U.S. Dept. of the Interior, Minerals Management Service, OCS Study MMS 90-070.
- Marshall, M.J. 1989. The effects of oil spills on seagrasses. Presentation summary. In: *Proceedings of the Tenth Annual Gulf of Mexico Information Transfer Meeting*.
- Marshall, M.J. 1987. Effects of the Bahia Las Minas, Republic of Panama, oil spill on *Thalassia* meadow communities Estuarine Research Federation Ninth Biennial Conference, New Orleans, Louisiana.
- Marshall, M.J. 1984. The feeding ecology of caridean shrimps in a shallow-water seagrass community - Benthic Ecology Meetings at Goucher College, Baltimore, Maryland.
- Marshall, M.J. 1983. Keys to the marine fauna and flora of the Cedar Keys area of Florida. Lab Manual for Integrated Marine Biology, Dept. of Zoology, University of Florida.
- Marshall, M.J. 1978. Serologically detected patterns of gastropod predation on an intertidal oyster bar - Southeastern Estuarine Research Society meeting at Harbor Branch, Ft. Pierce, Florida.