

CURRICULUM VITAE

Victor Hugo Rivera-Monroy

Present Position:

Assistant Professor-Research
Department of Oceanography and
Costal Sciences
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Previous Positions:

- 1) Senior Research Scientist, 2002-2004. Center for Ecology and Environmental Technology
PO Box 42451 University Louisiana at Lafayette, Louisiana USA 70504
- 2) Research Associate, 1997-2002. Department of Biology and Center For Ecology and Environmental Technology University of Louisiana at Lafayette
- 3) Post-Doctoral Researcher, 1995-1996. Department of Biology, University of Louisiana at Lafayette

RESEARCH INTERESTS: Estuarine and Coastal Ecosystems, Biogeochemistry of Wetlands, Landscape Modelling/Ecosystem Models, Coastal Management/Aquaculture

EDUCATION

Louisiana State University, Baton Rouge, LA, USA
Ph.D., Oceanography and Coastal Sciences, 1995
Dissertation title "Nitrogen fluxes in mangrove sediments and their coupling with aquatic primary productivity in Terminos Lagoon, Mexico"
Minors: Applied Statistics and Botany

Louisiana State University, Baton Rouge, LA, USA
M.S. Marine Sciences, 1989
Thesis title "Ammonium uptake and regeneration in the water column of a river-dominated estuary in Louisiana"

Universidad Autonoma Metropolitana-Xochimilco, Mexico D.F
B.S. Biology, 1979

PUBLICATIONS

Refereed:

Rivera-Monroy, V. H., Twilley, R. R., Day, J. W., Boustany, R., Vera-Herrera, F., Ramirez, C. **1995**. Direct denitrification in mangrove sediments in Terminos, Lagoon, Mexico. *Marine Ecology Progress Series* 126:97-109

Rivera-Monroy, V. H., Day, W. J., Twilley, R. R., Vera-Herrera, F., Coronado-Molina, C. **1995**. Flux of nitrogen and sediment in a fringe mangrove forest in Terminos Lagoon, Mexico. *Estuarine, Coastal and Shelf Science*. 40:139-160.

Rivera-Monroy, V. H., and Twilley, R. R. **1996**. The role of denitrification and immobilization on the fate of inorganic nitrogen in mangrove sediments of Terminos, Lagoon, Mexico. *Limnology and Oceanography*. 41:284-296.

Twilley, R. R., Pozo, M., Garcia, **V. H.**, Rivera-Monroy, V. H., Zambrano, R., Bodero, A. **1997**. Litter dynamics in riverine mangrove forests in the Guayas River estuary, Ecuador. *Oecologia*. 111:109-122

Pelegrí, S.P., **V.H. Rivera-Monroy**, and R.R. Twilley. **1997**. A comparison of nitrogen fixation (acetylene reduction) among three species of mangrove litter, sediments, and pneumatophores in south Florida, USA. *Hydrobiologia* 356:73-79.

Day, J. W., Coronado-Molina, C., Vera-Herrera, F. R., Twilley, R., **Rivera-Monroy, V. H.**, Alvarez-Guillen, H. Day, R., Conner, W. A. **1997**. A 7 year record of above-ground net primary production in a southeastern Mexican mangrove forest. *Aquatic Botany* 55:39-60.

Rivera-Monroy, V. H., Madden, C. J., Day, J. W., Twilley, R. R., Vera-Herrera, F. Alvarez-Guillen, H. **1998**. Seasonal coupling of a tropical mangrove forest and an estuarine water column: enhancement of aquatic primary productivity. *Hydrobiologia* 379:41-53

Twilley, R. R., Gottfried, R. R., **Rivera-Monroy, V. H.**, Zhang, W., Montaño-Armijos, M., Bodero, A. **1998**. An Approach and preliminary model of integrating ecological and economic constraints of environmental quality in the Guayas River estuary, Ecuador. *Environmental Science & Policy* 1: 271-288

Rivera-Monroy, V. H., Torres, L. A., Bahamon, N., Newmark, F., Twilley, R. R. **1999**. The potential use of mangrove forests as nitrogen sinks of shrimp aquaculture pond effluents: The role of denitrification. *Journal of the World Aquaculture Society* 30:12-25

Twilley, R. R., **V. H. Rivera-Monroy**, R. Chen, y L. Botero. **1999**. Adapting an ecological mangrove model to simulate trajectories in restoration ecology. *Marine Pollution Bulletin* 37:404-419.

Twilley, R. R., Chen, R., **Rivera-Monroy, V. H.** **1999**. Formulating a model of mangrove succession in the Caribbean and Gulf of Mexico with emphasis on factors

associated with global climate change. Current Topics in Wetland Biogeochemistry. 3: 118-141.

Childers, D. L., Davis, S. E., Twilley, R., **Rivera-Monroy, V. H.** 1999. Wetland-water column interactions and the Biogeochemistry of estuary-watershed coupling around the Gulf of Mexico. In: Biogeochemistry of the Gulf of Mexico Estuaries. Bianchi, T. S., Pennock, J. R., Twilley, R. R (eds.). John Wiley and Sons. New York. pp. 211-236.

Twilley, R. R., Cardenas, W. **Rivera-Monroy, V. H.**, Espinoza, J., Suescum, R. Armijos, M. M., Solorzano, L. 2001. The Gulf of Guayaquil and the Guayas River Estuary, Ecuador. In: Seelinger, U., and Kjerfve, B. (eds). Coastal Marine Ecosystems of Latin America. Ecological Studies, Vol 144. Speinger-Verlag, Berlin Heidelberg

Rivera-Monroy, V. H., R. Twilley, E. Medina, E. B. Moser, L. Botero, M. Rodriguez, E. Bullard. 2004. Spatial Variability of Soil Nutrients in Disturbed Riverine Mangrove Forests at Different Stages of Regeneration in the San Juan River Estuary, Venezuela. *Estuaries* 27: 44-57.

Rivera-Monroy, V. H., R. Twilley, Bone, D., Childers, D. L., Coronado-Molina, C., Feller, I. C., Herrera-Silveira, J., Jaffe, R., Mancera, E., Rejmankova, E., Salisbury, J. E., Weil, E. 2004. A Conceptual Framework to Develop Long Term Ecological Research and Management Objectives in the Tropical Coastal Settings of the Wider Caribbean Region. *BioScience* 54: 843856-000.

Twilley, R. R., and **V. H. Rivera-Monroy**. 2005. Developing Performance Criteria Using Simulation Models of Mangrove Ecosystem Restoration: A Case Study of the Florida Coastal Everglades. *Journal of Coastal Research* 40: 79-93.

Marc Simard, Keqi Zhang, Victor H. **Rivera-Monroy**, Michael Ross, Pablo Ruiz, Robert Twilley, Ernesto Rodriguez. 2006. 3D Mapping and Biomass Estimation of Mangroves of the Everglades with SRTM Elevation Data. *Photogrammetric Engineering & Remote Sensing* 72:299-311

Ewe, S.E., Daniel L. Childers, Evelyn E. Gaiser, David Iwaniec, **Victor H. Rivera-Monroy**, Robert R. Twilley, Jim Fourqurean 2006.. Spatial and temporal patterns of aboveground net primary productivity (ANPP) in the Florida Coastal Everglades LTER (2001-2004). *Hydrobiologia* 459:474.

Cardona-Olarte, P., R. R. Twilley, K.W. Krauss & **V. H. Rivera-Monroy**. 2006. Responses of neotropical mangrove seedlings grown in monoculture and mixed culture under treatments of hydroperiod and salinity. *Hydrobiologia* 325-341.

- Krauss, K.W., T. W. Doyle, R. R. Twilley, **V. H. Rivera-Monroy** & J. K. Sullivan. 2006. Evaluating the relative effects of hydroperiod and soil fertility as growth constraints in south Florida mangroves. *Hydrobiologia* 311-324.
- Romigh, M.M., S. E. Davis, III, **V. H. Rivera-Monroy**, and R. R. Twilley. 2006. Flux of Organic Carbon in a Riverine Mangrove Forest in the Florida Coastal Everglades. *Hydrobiologia*. Hydrobiologia 55-516.
- Castañeda-Moya, E., **Rivera-Monroy, V. H.**, Twilley, R. R. 2006. Mangrove Zonation in the Dry Life Zone of the Gulf of Fonseca, Honduras. *Estuaries and Coasts* 29:751-7.
- Rivera-Monroy, V.H.**, Twilley, R. R., Mancera, E., Alcantara-Eguren, A., Castañeda-Moya, E., Casas-Monroy, O., Reyes, P., Restrepo, J., Perdomo, L., Campos, E. Cotes, G. Villoria, E. 2007. Aventuras y Desventuras en Macondo: Rehabilitacion de la Cienaga Grande de Santa Marte, Colombia. Ecotropicos.
- Berger, U., **V. H. Rivera-Monroy**, T. W. Doyle, F. Dahdouh-Guebas, N. C. Duke, M. L. Fontalvo-Herazo, H. Hildenbrandt, N. Koedam, U. Mehlig, C. Piou, and R. R. Twilley. 2008. Advances and limitations of individual-based models to analyze and predict dynamics of mangrove forests: A review. *Aquatic Botany* 89:260-274.
- Bouillon, S., A. V. Borges, E. Castaneda-Moya, K. Diele, T. Dittmar, N. C. Duke, E. Kristensen, S. Y. Lee, C. Marchand, J. J. Middelburg, **V. H. Rivera-Monroy**, T. J. Smith, and R. R. Twilley. 2008. Mangrove production and carbon sinks: A revision of global budget estimates. *Global Biogeochemical Cycles* 22.
- Habib, E., B. F. Larson, W. K. Nuttle, **V. H. Rivera-Monroy**, B. R. Nelson, E. A. Meseth, and R. R. Twilley. 2008. Effect of rainfall spatial variability and sampling on salinity prediction in an estuarine system. *Journal of Hydrology* 350:56-67.
- Habib, E., W. K. Nuttle, **V. H. Rivera-Monroy**, S. Gautam, J. Wang, E. Meselhe, and R. R. Twilley. 2007. Assessing effects of data limitations on salinity forecasting in Barataria basin, Louisiana, with a Bayesian analysis. *Journal of Coastal Research* 23:749-763.
- Mendez-Alonso, R., J. Lopez-Portillo, and **V. H. Rivera-Monroy**. 2008. Latitudinal variation in leaf and tree traits of the mangrove *Avicennia germinans* (Avicenniaceae) in the central region of the Gulf of Mexico. *Biotropica* 40:449-456.
- Poret, N., R. R. Twilley, **V. H. Rivera-Monroy**, and C. Coronado-Molina. 2007. Belowground decomposition of mangrove roots in Florida Coastal Everglades. *Estuaries and Coasts* 30:491-496.
- Rivera-Monroy**, V. H., K. de Mutsert, R. R. Twilley, E. Castaneda-Moya, M. M. Romigh, and S. E. Davis. 2007. Patterns of nutrient exchange in a riverine mangrove forest in the Shark River Estuary, Florida, USA. *Hidrobiologica* 17:169-178.

Simard, M., V. H. **Rivera-Monroy**, J. E. Mancera-Pineda, E. Castaneda-Moya, and R. R. Twilley. 2008. A systematic method for 3D mapping of mangrove forests based on Shuttle Radar Topography Mission elevation data, ICESat/GLAS waveforms and field data: Application to Cienaga Grande de Santa Marta, Colombia. *Remote Sensing of Environment* **112**:2131-2144.

Zhang, K. Q., M. Simard, M. Ross, V. H. **Rivera-Monroy**, P. Houle, P. Ruiz, R. R. Twilley, and K. R. T. Whelan. 2008. Airborne laser scanning quantification of disturbances from hurricanes and lightning strikes to mangrove forests in Everglades National Park, USA. *Sensors* **8**:2262-2292.

Twilley, R.R and **Rivera-Monroy, V.H.** **In press**. Sediment and Nutrient Tradeoffs in Restoring Mississippi River Delta: Restoration vs Eutrophication. *Journal of Contemporary Water Research & Education* **141**: 1-6.

Twilley, R.R and **Rivera-Monroy, V.H.** **In press** Nutrient Biogeochemistry of mangrove wetlands. In *Coastal Ecosystems of the World*. Springer.

Mancera-Pineda, E., Twilley, R.R and **Rivera-Monroy, V.H.** **In press** Carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) isotopic discrimination in mangroves in Florida Coastal Everglades as a function of environmental stress. *Bulletin of Marine Science*.

Rivera-Monroy, Lenaker, P, Twilley R. et al. **In review**. Denitrification in coastal Louisiana: A spatial assessment and research needs. *Journal of Sea Research*.

Rivera-Monroy, Twilley, R.R. David, S. et al. **In Review**. The Role of the Mangrove Ecotone Region in Regulating Nutrient Cycling and Wetland Productivity in South Florida. *Critical Reviews in Environmental Science and Technology*

Other Publications/Reports

Rivera-Monroy, V. H., B. F. Jonsson, R.R. Twilley, O. Casas-Monroy, E. Castañeda, R. Montiel, E. Mancera, W. Troncoso, F. Daza-Monroy. **2002**. Cienaga Grande de Santa Marta: a tropical coastal lagoon in a deltaic geomorphic setting. In: LOICZ/UNEP Estuarine systems of the Latin American region (Regional Workshop V) and estuarine systems of the Arctic Region: carbon, nitrogen and phosphorus fluxes. LOICZ Reports & Studies No. 23. Camacho-Ibar, V., V. Dupra, F. Wulff, S.V. Smith, J.I. Marshall Crossland, and C.J. Crossland (eds). Pages: 22-27, LOICZ IPO, Texel, The Netherlands.
<http://data.ecology.su.se/MNODE/South%20America/cienegagrande/cienegagrandebud.html>

Rivera-Monroy, V. H., B. F. Jonsson, R.R. Twilley. **2002**. Guayas River Estuary, Gulf of Guayaquil. In: LOICZ/UNEP Estuarine systems of the Latin American region (Regional Workshop V) and estuarine systems of the Arctic Region: carbon, nitrogen and phosphorus fluxes. LOICZ Reports & Studies No. 23.

Camacho-Ibar, V., V. Dupra, F. Wulff, S.V. Smith, J.I. Marshall Crossland, and C.J. Crossland (eds). Pages: 28-33, LOICZ IPO, Texel, The Netherlands.

<http://data.ecology.su.se/MNODE/South%20America/guayaquil/GuayasR/GuayasRbud.htm>

Rivera-Monroy, V.H Mancera Pineda, Twilley, R. R., and others E. 2001. "Estructura y Funcion de un Ecosistema de Manglar a lo Largo de una Trayectoria de Restauración". Final Report. Ministry of the Environment and Instituto de Investigaciones Marinas-INVEMAR, Colombia Government. Colombia.

Rivera-Monroy, V. H, R.R. Twilley, Castañeda, E. 2002. "Hurricane Mitch: Integrative Management and Rehabilitation of Mangrove Resources to Develop Sustainable Shrimp Mariculture in the Gulf of Fonseca, Honduras". USGS Open File Report OFR 02-xxx. U.S. Department of the Interior. U.S. Geological Survey. pp. 119.

Rivera-Monroy, VH, RR Twilley, E. Castaneda, K. de Mutsert, C Jesch. 2005. Identifying Performance Criteria for Mangrove Forests Using Conceptual and Simulation Models of Restoration and Rehabilitation. Funded Under Purchase Everglades and Watershed Management Divisions, South Florida Water Management District. Order: PC-P501850. West Palm Beach, Florida.

Emad Habib, **Victor H. Rivera-Monroy** William Nuttle, Shankar Gautam, E. Barry Moser, Robert Twilley. 2006. An Uncertainty Analysis framework for the CLEAR Ecosystem Model: Using Barataria Basin as Test Domain and Skill assessment. Coastal Louisiana Ecosystem Assessment and Restoration (CLEAR) Research Facility, LA Department of Natural Resources.

Research Support and Proposals

Current and Pending:

- 1) National Science Foundation/LTER Program. FCE/LTER - Florida Coastal Everglades. Subcontract with FIU. March 2000 to February 2006. Collaborator. \$299,366. Funded
- 2) JPL-NASA. "Large scale assessment of landscape changes and recovery in forest structure of mangrove wetlands subject to human (shrimp mariculture, silviculture, agricultural chemicals), freshwater diversion, and natural disturbances (hurricanes, other severe storms, climate and sea level change) using enhanced Shuttle Radar Topography Mission data". Co-Principal Investigator (**2004-2007**). \$93, 000. Funded
- 3) LA Department of Natural Resources, Conceptual Ecological Models for Planning and Evaluating the Louisiana Coastal Area Restoration Plan. June 2002 to March 2005. Funded. \$1,023,469. Co-Chair of Task #9: A Preliminary Report Describing Uncertainty Analysis of the CLEAR Model", \$27,561. Funded
- 4) "Nutrient and Carbon Fluxes at Different Spatial Scales in the Shark River Estuary Florida". National Oceanic and Atmospheric Administration. Co-Principal Investigator, (**2003**) \$90,486, Denied Funding.

- 5) South Florida Water Management District, Florida, SFWMD. "Evaluating the effect of hydroperiod and soil fertility on the productivity and structure of mangrove forests in South Florida: A Mesocosm Experiment USA. Co-Principal Investigator. (2005) \$48,000, Accepted.
- 6) Sea Grant Program. Landscape Patterns of Denitrification in Marsh and Subtidal Sediments of Breton Sound During River-Pulsing Events Using Isotopic Methods. R. R. Twilley, V.H. Rivera-Monroy, C. Lindau. 2006-2007, 24 months, \$149,456. Approved.
- 7) National Oceanic and Atmospheric Administration. Estuarine wetland control of nitrogen loading to Florida Bay. Victor H. Rivera-Monroy, R. R. Twilley, Stephen Davis. 2006-2008, 24 months, \$236, 250. PI. Approved.
- 8) LSU Faculty Research Grant Program. Denitrification in Marsh and Mangrove soils: Testing the Role of Hydrogen Sulfide as a Soil Regulator. Victor H. Rivera-Monroy. 12 months. 2006-2007. \$10,000 Approved.
- 9) South Florida Water Management District (SFWMD). Cesium-137 activity and bulk density analyses of soil cores in the freshwater Everglades region. Victor H. Rivera-Monroy, Ron Delaune, Robert R. Twilley. 2006-2007. 12 months. \$50, 000. Approved
- 10) South Florida Water Management District (SFWMD). Assessing nutrient retention in the Taylor River region using hydrodynamic and mangrove models. Victor H. Rivera-Monroy, Robert R. Twilley, Emad Habib, Dr. Ehab Meselhe. 2007-2008. 24 Months. \$150, 000. In Review.
- 11) National Council for Research and Technology-Mexico (Consejo Nacional de Ciencia y Tecnologia-Mexico). Demandas Hidrologicas de los Ecosistemas Naturales en Mexico: Fase 1. Manuel Mass, Victor H. Rivera-Monroy, et al. 2007-2009. \$500,000. In Review.

Funded During Last Five Years:

- 1) NBS/USGS, Everglades Restoration Program, "Interfacing the MANGAL Model with the Mangrove Research and Landscape Modelling Efforts of the Everglades Watershed". Funded. Jan 2001 to December 2003. \$175,000. Co-principal Investigator.
- 2) US Department of Energy, " Restoration and rehabilitation of wetland ecosystems to sustain energy technologies in coastal environments" June 1999 to June 2002. Funded. \$999,815. Data management and analysis of information. Supervision of technical personnel and graduate students.
- 3) USGS/NWRC, "Integrative Management and Rehabilitation of Mangrove Resources to Develop Sustainable Shrimp Mariculture in the Gulf of Fonseca, Honduras", January 2000 to December 2001, PI/PD: Robert Twilley; Co-PI's: Victor Rivera-Monroy. \$72,406. Coordination of field activities and analysis of information.

- 4) COLCIENCIAS, Colombia, "Structure and Function of a Mangrove Ecosystem Along a Trajectory following landscape-Level Disturbance. March 1998 to April 2001. Funded. \$135,000. Design and implementation of field studies, supervision of graduate and undergraduate students and technical personnel.
- 5) USDA Forest Service, International Institute of Tropical Forestry, "Succession and biomass production of mangroves in the San Juan River, Venezuela: Implications to the modelling and management of coastal forested wetlands." April 1996 to September 1998. Funded. \$111,000. Implementation of soil nutrient study and collaboration in forest structure evaluation.
- 6) USCOE/Everglades National Park, "Evaluating the Response of Mangrove Wetlands to Alterations of Freshwater Flow in Everglades National Park". June 1997 to September 1998. Funded. \$148,000. Field support and statistical analyses of technical information. Developed a framework to build water salinity box models.
- 7) Everglades National Park. The Significance of Nutrient Redistribution and Regeneration to the Recovery of Mangrove Ecosystems of South Florida in Response to Hurricane Andrew. December 1993 to December 1995. \$63,580. Developed a framework to build water salinity box models and contributed to the statistical analyses of information.

RECENT PROFESSIONAL ACTIVITIES

- 1) Louisiana Coastal Wetland Restoration Feasibility Study. Nutrient Dynamics Module, Co-Chair Task Group. Department of Natural Resources, Louisiana State Government, USA **(2002-2003)**
- 2) Conceptual ecological models for planning and evaluating the Louisiana coastal area restoration plan. The Coastal Louisiana Ecosystem Assessment and Restoration program (CLEAR). Co-Chair Task No. 9: A Preliminary Report Describing Uncertainty Analysis of the CLEAR Model. Louisiana Department of Natural Resources **(2004-2005)**.
- 3) Contributor to the preparation of guidelines to develop best management practices in the shrimp aquaculture industry. Final Report Mangrove Conservation Survey. Global Aquaculture Alliance. **2004**.
- 4) Member, National Executive Board, Mexican Long Term Ecological Research Network (2004-2008)
- 5) Member, Executive Board of the -LTER MEXICO site. Merida, Yucatan. ECOPEY (Ecosistemas Costeros de la Peninsula de Yucatan).
- 6) Coordinator Workshop: Nutrient, Carbon and Water fluxes in Mexican LTER sites. Colima Mexico April 2006.
- 7) Member, Review Panel, Research Agenda National Ecological Research

ACADEMIC PROGRAM

Theses Directed:

- 1) Paola Reyes-Forero. Bachelor, Biology. Pontificia Universidad Javeriana. Facultad de Ciencias. Bogota, Colombia. 2001.

Thesis: "Factores que regulan la distribucion y crecimiento de *Typha dominguensis* en humedales costeros perturbados: El caso de la Ciénaga Grande de Santa Marta, Caribe Colombiano".

- 2) Elizabeth Campos-Chinchilla. Bachelor, Biology. Pontificia Universidad Javeriana. Facultad de Ciencias. Bogota, Colombia. 2001.

Thesis: "Efectos de la concentración de taninos en la herbivoría de *Junonia evarete* (Ord.: Lepidoptera: Nymphalidae) durante el crecimiento de propágulos y plántulas de manglar en la Ciénaga Grande de Santa Marta, Caribe Colombiano".

- 3) Jorge de Jesús Restrepo Martínez. Master of Science. Universidad Nacional de Colombia, Facultad de Ciencias Agropecuarias, Departamento de Ciencias Forestales, Medellín, Colombia. 2002

Thesis: "Descomposición de madera en bosques de manglar perturbados y su importancia en la rehabilitación de la Ciénaga Grande de Santa Marta"

- 4) Laura Perdomo-Trujillo, Master of Science. Universidad Nacional de Colombia, Facultad de Ciencias. Bogota, Colombia. 2001.

Thesis: "Patrones de regeneracion en bosques de manglar pertubados, Ciénaga Grande de Santa Marta, Colombia".

- 5) Edward Castañeda, Master of Science. University of Louisiana at Lafayette. Lafayette, Louisiana, USA. 2003 (Committee Member)

Thesis: "Spatial patterns of mangrove forest structure in a dry environmental setting, the Gulf of Fonseca, Honduras"

- 6) Theo Vlaar: Master of Science. "Larenstein University of Professional Education

Thesis: Hydrologic conditions of the Shark estuary relating to regional physical forcings in the Everglades 2005

TEACHING EXPERIENCE

- 1) Lecturer Biology for non-majors. Department of Biology, University of Louisiana at Lafayette. Lafayette, Louisiana. 1997-1998.
- 2) Coordinator and lecturer of the summer course “Structure and function of mangrove forests: Current concepts and their application in rehabilitation and restoration projects in the coastal zone” Course developed in collaboration with the Centro de Investigaciones Avanzadas-CINVESTAV, Instituto Politecnico Nacional, Merida, Yucatan, Mexico. Summer 2003, 2004, and 2005.
- 3) Presentations in Short Course in Earth-Surface Dynamics/ NCED Science and Technology Center, NSF. Johns Hopkins University. May 26-28, 2005.
- 4) co-Coordinator of Coastal Ecology course, Organization of Tropical Studies; in collaboration with the Instituto de Ecología A.C. Xalapa, Veracruz January 29- March 8, 2006
- 5) Mangrove Restoration Summer Course, CINVESTAV, Merida Mexico. 2005-2008.

PROFESSIONAL AFFILIATIONS

Estuarine Research Federation
Society of Wetland Scientists
Ecological Society of America
SACNAS - Society for Advancement of Chicanos and Native Americans

LANGUAGES

English
Spanish