

# RAHANNA A. JUMAN

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<i>Nationality:</i>	Trinidad & Tobago
<i>Date of Birth:</i>	February 14 <sup>th</sup> 1973
<i>Profession:</i>	Ecologist
<i>Principal Areas of Expertise:</i>	Wetlands Ecology, Natural Resource Management, Mangrove Forest Restoration, Integrated Coastal Zone Management, Climate Change Adaptation, Law
<i>Current Position:</i>	Deputy Director (Acting), Institute of Marine Affairs, Trinidad and Tobago
<i>Highest Academic Attainment:</i>	Ph.D. Degree (Zoology), University of the West Indies, 2004
<i>Other Qualifications:</i>	B.Sc., Hons. (Zoology and Botany) University of the West Indies, 1996 Bachelor of Law (LLB) –University of London (2015)

## EMPLOYMENT RECORD

### **Institute of Marine Affairs – September 1996 to Present**

#### **December 2015 – Present**

##### *Deputy Director (Ag.)*

I have responsibility for leading research at Institute of Marine Affairs (IMA) as Deputy Director (Ag.). This includes managing the research programmes, developing work-plan and budgets, and reviewing and approving all presentations, reports and publications.

#### **June 2013 - May 2016**

##### *Principal Research Officer, Biodiversity Research Programme*

In addition to conducting research on coastal wetlands and seagrass beds, this position requires the management and co-ordination of research activities in the Programme. Research areas under this programme include Wetlands Ecology, Coral Reef Ecology, Benthic Ecology, Marine Invasive Species, Restoration Ecology, Taxonomy (Marine Reference Collection), and Marine Protected Areas. Duties include preparing budgets, formulation research project and the department's work plan, guiding researchers and reviewing research report and manuscript for publication.

## **EMPLOYMENT RECORD (cont'd)**

### **Institute of Marine Affairs – September 1996 to Present (cont'd)**

#### **November 2013 - December 2014**

*Officer-in-Charge of Oceanography and Coastal Processes Research Programme*

Management and coordination of research projects in Coastal Geology and Oceanography. Duties include preparing budgets, formulation of the department's work plan, guiding researchers and reviewing research report and manuscript for publication.

#### **August 2009 - January 2012**

*Officer-in-Charge, Environmental Research Programme*

In addition to conducting research on coastal and marine ecosystems, this position requires managing and co-ordinating research staff and activities of the Environmental Research Department. Duties included formulating work-plan, preparing and managing budgets, recruiting staff, overseeing research and reviewing research reports and publications in Coastal Geology, Hydrography/ Oceanography, Remote Sensing and Marine Ecology.

#### **February 2001 - July 2009**

*Promoted in 2007 to Senior Research Officer*

#### **February 2001 - July 2007**

*Research Officer, Wetlands Ecology, Environmental Research Programme*

Duties include: Conceptualising and planning research projects on marine and coastal ecosystems, conducting research, and publishing results; conducting environmental impacts assessment, baseline surveys and feasibility studies for clients; preparing material for public education and outreach and representing the IMA on national policy committees. Supervision of junior staff: marine technicians, Junior Research Officers and summer interns.

#### **October 1997 - December 2000**

*Research Fellow assigned to Director's Officer*

Conducting M Phil and Doctoral Research.

#### **September 1996 - September 1997**

*Research Assistant/ Marine Technician assigned to the Wetland Ecologist*

Duties included: Assisting the wetland ecologist with all aspects of wetlands research and with consultancies.

## EDUCATIONAL BACKGROUND

- PH.D. (ZOOLOGY).** University of the West Indies, 2004 “Characterisation and Ecology of the Bon Accord Lagoon, Tobago, West Indies” *Keywords:* coral reef, seagrass beds, mangrove swamp, productivity, hydrology, water quality, faunal composition, interrelationships, catchment
- B.SC. (ZOOLOGY/BOTANY):** University of the West Indies, Upper 2<sup>nd</sup> Class Honours. (1996).
- Zoology courses included:* General Ecology, Coastal Ecosystem Management, Marine Biology and Oceanography, Parasitism, Fish Biology, Entomology, Invertebrate Zoology, Vertebrate Zoology, Freshwater Ecology, Physiology
- Botany courses included:* Plant physiology, Microbiology, Mycology, Plant Diversity, Taxonomy and Systematic, Forest Ecology, Conservation Biology, Plant Breeding, Genetics
- BACHELOR OF LAW (HONS)** – University of London, 2015. Course taken: Public Law, Contract Law, and Common Law, Reasoning and Legal Institution, Criminal Law, Law of Tort, Law of Trust, International Public Law and International Protection of Human Rights
- CERTIFICATE IN THE PRINCIPLE OF PROJECT MANAGEMENT (PMBOK)** - School of Business and Computer Science, Champ Fleur, Trinidad and Tobago- September 2008

## TRAINING WORKSHOP

1. Sediment transportation workshop in Belem, Brazil as part of a larger twinning concept between the Amazon River and Caribbean Sea GEF projects. May 2017;
2. Sustainable Ocean Initiative Regional Workshop, Costa Rica Feb 20-24<sup>th</sup> 2017;
3. Inter-American Development Bank- Caribbean Coastal Capital Centre of Excellence Workshop, Barbados, October 11-12, 2016;
4. Caribbean Climate Online Risk Assessment Tool (CCORAL) Training Workshop, UTT, Chaguanas, June 2015;
5. Integrated Coastal Zone Management, Cruise Inn Hotel, Chaguaramas. April 2010. Workshop was facilitated by NOAA personnel;
6. Land-Sea Coupling: Changing Land Use and the Role of Coastal Ecosystems in Trinidad and Tobago Workshop, IMA, Chaguaramas, Trinidad January 26 -30<sup>th</sup> 2009. Workshop was facilitated by Dr Ivan Valiela, Marine Biological Laboratory, Woods Hole;
7. Mangrove Ecology, Management and Restoration Workshop, Anne Kolb Centre, West Lake Park, Ft. Lauderdale, Florida, February 21-24<sup>th</sup> 2004. Facilitated by R. R Lewis III
8. Caribbean Water & Wastewater Association (CWWA) Watershed Planning & Management Workshop, Cascadia Hotel, August 9-10<sup>th</sup> 2005
9. CANARI Workshop on the Participatory Approaches to Wetlands Management, May 30-June 2<sup>nd</sup> 2006.

## FELLOWSHIPS AWARDED

### 1. September 2010-June 2011

*Hubert H. Humphrey Fellow* assigned to Evans School of Public Policy, University of Washington, USA. This programme allows for academic training and professional development by attending academic courses, training workshops and through internships.

Academic courses: Environmental Policy Process, Government Responses to Global Climate Change, International Environmental Law, Professional Development and Leadership Training Seminars

Internship at NOAA's Office of Coastal Resource Management, Silver Spring, MD (Jan 24-Mar 26<sup>th</sup> 2011) evaluating integrated coastal zone management (ICZM) programmes in Delaware and Maryland and looking at how climate change adaptation is being built into these ICZM programmes.

Internship at the Department of Ecology, Washington State (May 2<sup>nd</sup> -Jun 15<sup>th</sup> 2011)-participated in the process by the counties updating their ICZM plan.

Training Workshops attended

- Conflict Mediation/ Resolution, Cascade Course, Evan School, UW June 1<sup>st</sup>-3<sup>rd</sup> 2011
- Strategic Planning Workshop, American Management Association, New York, Mar 7-9<sup>th</sup> 2011
- International Development and Social Justice, Emory University, Atlanta Mar 13-18<sup>th</sup> 2011
- Disaster Planning and Management, Tulane University, New Orleans Feb 20-25<sup>th</sup> 2011

### 2. January to May 2008

*Watson International Scholars of the Environment Fellowship Programme*, Brown University, Rhode Island, USA. **Certificate on Land Use Changes in Developing Countries**

Modules include Climate Change, Environmental Economics, Population and the Environment, Poverty and the Environment, Environmental Conflict Resolution, Multi-Lateral Governance.

### 3. September to December 2006.

*American Fellowship at the US Environmental Protection Agency* in the Wetlands Division under the Ocean Watershed and Wetlands Office in Washington DC. Developed a Coastal Resource Initiative white paper for the US. Pilot project to be developed and implemented in North Carolina.

### 4. August 2002-February 2003.

*UNESCO/L'OREAL Post-Doctoral Fellowship for Young Women in Science*. Conducted post doctoral research in the Marine Science Programme, at the University of the South Carolina, U.S - Hydrodynamic processes in coastal lagoons and modelling.

## FELLOWSHIPS AWARDED (cont'd)

### 5. February 2000-December 2000

*Senior Research Fellow*, Institute of Marine Affairs

Duties include: Conducting Ph.D research and undertaking consultancy work in Wetlands Ecology (see attached project list)

### 6. October 1997 – January 2000

*Junior Research Fellow*, Institute of Marine Affairs

Duties include: Conducting Masters of Philosophy (MPhil) research and undertaking consultancy work in Wetlands Ecology. Masters was upgraded to PhD.

## TEACHING EXPERIENCE

Part time Lecturer – MSc Integrated Coastal and Ocean Management, University of Trinidad and Tobago

- i. Integrated Coastal and Ocean Management (June –Aug 2016)
- ii. Marine Protected Area (April –June 2016)

Guest Lecturer MSc Ocean and Coastal Management Programme, University of Trinidad and Tobago, February 2014, 2015 and March 2017.

Guest Lecturer MSc Coastal Engineering Programme, University of the West Indies, October 2011

Supervisor -University of the West Indies MPhil Student- Lorraine Daniel 2007-2010

Guest Lecturer, MSc Environmental Management Programme, University of Trinidad and Tobago. Lectured on coastal and marine ecosystems and marine resource management, April 2009

Guest lecturer (Zoology Department, University of the West Indies, St Augustine, Trinidad) Coastal Ecosystem Management Course (**Z31A**). Lectured on Seagrass Ecosystems in October 1999 and 2000, and on seagrass ecosystems and interactions between coastal ecosystems in October 2001

Facilitator of a 2-day Mangrove Training Workshop in Tobago hosted by the Tobago House of Assembly, Department of Natural Resources and the Environment, March 2006 and March 2014

## PROJECT EXPERIENCE

- Chair of Technical Advisory Committee for Inter-American Bank (IDB) technical cooperation ‘Design and Feasibility of a Risk Resilient Coastal Zone Programme for Trinidad and Tobago
- Technical Expert on Inter-American Bank (IDB) technical cooperation with the Institute of Marine Affairs – ‘Piloting the integration of climate change adaptation and Coastal Zone Management in Southwest Tobago’
- Chair of Steering Committee with responsibility to develop an Integrated Coastal Zone Management Policy Framework, Strategies and Action Plan for Trinidad and Tobago
- The Characterisation and Ecology of the Bon Accord Lagoon, Tobago, West Indies
- CARICOMP (Caribbean Coastal Marine Productivity Programme)
- Caribbean River Basin Study (CARIBAS)- Regional assessment
- Inventory and monitoring of seagrass communities around Trinidad and Tobago
- A preliminary assessment of the ecological status of the Godineau Project and preparation of management strategies for this system
- Caroni River Basin Project- Land-based sources of pollution and its impacts on the marine environment
- Economic Valuation of Coral Reef Resources in Tobago- Collaborative research with the World Resource Institute.
- Climate Change Impacts on Caribbean Biodiversity, Development of a Research Agenda for the Insular Caribbean
- The Status of mangrove forests around Trinidad and Tobago
- Land Cover Change in the Caroni Swamp, Trinidad 1942-2007
- Contributed to the 2010 Census of Marine Life Project
- Lead Author Chp 2: IPBES (international Panel on Biodiversity and Ecosystem Services) Regional Assessment- The Americas
- Contributed to Mangroves of the World Publication by the International Society of Mangrove Ecologist (ISME)
- Contributed to Chp 3: Global Sustainable Development Report 2015 United Nations
- Lead wetland scientist on various Environmental Impact Assessments/ Feasibility Studies related to industrial, residential, hotel, infrastructural (roads and causeway) development in the coastal zone.

### COMMITTEES/ AFFILIATIONS

- IMA's Representative on the Inter-ministerial Integrated Coastal Zone Management Committee
- National Co-ordinator for the Association of Caribbean States' Project -Impact assessment of Climate Change on the Sandy Shorelines of the Caribbean: Alternatives for its control and resilience
- National Focal Point for Coastal and Marine Biodiversity under the UN Biodiversity Convention
- National Focal Point – International Oceanographic Commission (IOC) Sub-commission - IOCARIBE
- Member of the FAO Protected Areas Sub-committee for Caroni Swamp (Aug 2015-present)
- EU climate resilience project – Technical Working Group (Coastal Resources)
- Member of the National Steering Committee for the European Union Environmental Programme (Dec 2016-present)
- Member of the Environmental Management Authority's Board of Governor June-September 2015
- Member of the Environment Management Authority Board of Trustees June -September 2015
- Member of the Cabinet appointed National Environmental Assessment Task Force to investigate the December 2013 oil spill along the southwest coast of Trinidad
- Chairperson- National Integrated Coastal Zone Management Steering Committee
- Lead Author Chapter 2: International Panel on Biodiversity and Ecosystem Services (IPBES) Global Assessment.
- Member of the National Steering Committee for the UNDP Small Grant Programme
- Member of the Technical Working Group on Climate Change Adaptation for the Global Environmental Facility Small Grants Programme (GEF-SGP)
- Member of CANARI's Advisory Panel for Adaptation: Rapid Institutional Analysis research in Trinidad and Tobago and Saint Lucia
- International Society for Mangrove Ecosystems (ISME)
- IUCN Commission on Ecosystem Management (CEM)
- Society of Wetland Scientists
- Association of Marine Laboratory in the Caribbean (AMLC)
- Board Member, Organization for the Promotion of Agroforestry (OPA) in Haiti (Non-governmental Organisation)
- National Wetlands Committee of Trinidad and Tobago

## TECHNICAL PUBLICATIONS

### Books

- Juman, R. A** and Hassanali, K. 2013. Mangrove Conservation in Trinidad and Tobago In: Gleason G. & Victor, T. R. (Eds.) *Mangrove Ecosystems: Biography, Genetic Diversity and Conservation strategies*. Nova Publisher, New York
- Juman, R. A.** (2009). *Wetlands of Trinidad and Tobago*. Book published by the Institute of Marine Affairs, Hilltop Lane, Chaguaramas

### Papers

- Brigitta I. van Tussenbroek<sup>1</sup>, Jorge Cortés, Rachel Collin, Ana C. Fonseca, Peter M.H. Gayle, Hector M. Guzmán, Gabriel E. Jácome, **Rahanna Juman**, Karen H. Koltes, Hazel A. Oxenford, Alberto Rodríguez-Ramirez, Jimena Samper-Villarreal, Struan R. Smith, John J. Tschirky, Ernesto Weil. 2014 Caribbean-1 wide, long-term study of seagrass beds reveals local 2 variations, shifts in community structure and occasional collapse. *PLoS One Journal* Vol 9, Issue 3
- Juman R. A. and Ramsewak, D.** (2013). The Status of Mangrove Forests in Trinidad and Tobago. *Caribbean Journal of Science* Vol. 47, No. 2-3, 300-313
- Juman, R.A** and Ramsewak, D. 2013. Land cover changes in the Caroni Swamp Ramsar Site, Trinidad (1942 and 2007): implications for management. *J Coastal Conserv* Volume 17:133-141
- Cambers, G., Claro, R., **Juman, R.** and Scott, S. (2009) *Climate Change Impacts on Coastal and Marine Biodiversity Working Group Paper for the Climate Change and Biodiversity in the Insular Caribbean (CCBIC) Project*, Caribbean Natural Resources Institute, Trinidad and Tobago
- Juman, R. A.** 2005 The structure and productivity of the *Thalassia testudinum* community in the Bon Accord Lagoon, Tobago *Revista de Biología* 53 (Suppl. 1): 219-227
- Juman, R. A.** 2005 Biomass, litterfall and decomposition rates for the fringed *Rhizophora mangle* forest lining the Bon Accord Lagoon, Tobago. *Revista de Biología* 53 (Suppl. 1): 207-217
- Juman, R.,** Bacon, P. & Gerald, L. 2002 Environmental modifications and impacts on the Caroni River basin, Trinidad Pp 24-33 In: Kjerfve B., Wiebe, W. J., Kremer, H. H., Salomons, W., Marshall Crossland, J. I (Caribbean); Morcom, N., Harvey, N. and Marshall Crossland, J. I. (Oceania) *Caribbean Basins, LOICZ (Land-Ocean Interaction in the Coastal Zone) Global Change Assessment and Synthesis of River Catchment/Island-Coastal Sea Interaction and Human Dimensions; with a desktop study of Oceania Basins. LOICZ Reports and Studies # 27, ii + 174pp, LOICZ, Texel, The Netherlands.*

## Papers (cont'd)

- Juman, R.** & Bacon, P. 2002 Buccoo Reef Case Study Pp 34-41 In: Kjerfve B., Wiebe, W. J., Kremer, H. H., Salomons, W., Marshall Crossland, J. I (Caribbean); Morcom, N., Harvey, N. and Marshall Crossland, J. I. (Oceania) Caribbean Basins, LOICZ (Land-Ocean Interaction in the Coastal Zone) Global Change Assessment and Synthesis of River Catchment/Island-Coastal Sea Interaction and Human Dimensions; with a desktop study of Oceania Basins. LOICZ Reports and Studies # 27, ii + 174pp, LOICZ, Texel, The Netherlands
- Hoetjes, P., Lum Kong, A., **Juman, R.**, Miller, M., DeMeyer, K. & Smith, A. 2002. Status of coral reefs in the eastern Caribbean, the OECS, Trinidad and Tobago, Barbados and the Netherlands Antilles. In: C. Wilkinson (ed.) *Status of Coral Reefs in the World*. Australian Institute of Marine Science.

## RESEARCH REPORTS

- **Juman, R. A. 2012** Land use impacts on *Thalassia testudinum* dominated seagrass communities around Trinidad and Tobago. Research Report. Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A. & Ramsewak, D. 2012** Land cover changes in the Caroni Swamp (1942-2007). Research Report. Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A. & Ramsewak, D. 2010.** The state of mangrove forests in Trinidad and Tobago. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A. & Bejai, M. 2008.** Beam Trawl Survey of the Seagrass Macro-faunal Community in William's Bay, Chaguaramas. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A. & Sookbir, S. 2006.** Description of the present hydrological regime in the Godineau Swamp. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A & Sookbir, 2006.** Description of the present ecological characteristics of the Godineau Swamp. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman. R. A. 2006.** An inventory of seagrass communities around Trinidad and Tobago. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- **Juman, R. A. 2006.** Seagrass Monitoring Programme for Trinidad and Tobago 2002-2004. Research Report, Institute of Marine Affairs, Hilltop Lane, Chaguaramas
- US Embassy Guiana Shield Mangrove Conference- presented on 'Mangrove Swamp for Disaster Risk Reduction- Case Study of Trinidad and Tobago, Surinam, August 2017

## CONFERENCES/ SYMPOSIA

- TED x POS Speaker October 7<sup>th</sup> 2017. Are you ready for change, climate change?
- Inter- American Development Bank's Caribbean Coastal Resilience Conference, September 26-27<sup>th</sup> 2017, Bahamas. Presented on 'Trinidad and Tobago's ICZM Experience, Challenges and Lessons Learnt'.
- University of Trinidad and Tobago's Enhancing Ocean Governance Symposium, presented on 'IMA's Role in Coastal and Ocean Governance' June 2017
- Panellist at UN Oceans Conference Policy Dialogue on Ocean Acidification, New York, June 2017
- IOCARIBE 35th Anniversary – International Marine Sciences Conference. Presented on Data accessibility in the Caribbean, Bridging the gap between science and management, Columbia, April 2017
- International Oceanographic Commission- 14<sup>th</sup> Sub Regional Meeting (IOCARIBE), April 26-28<sup>th</sup> 2017, Cartagena, Columbia
- THE 10X20 INITIATIVE, Conference on Marine Protected Areas: An Urgent Imperative-A Dialogue between Scientists and Policymakers Rome, Italy, March 7-9<sup>th</sup> 2016
- Eye on Earth Summit, Abu Dhabi, United Emirates, 6<sup>th</sup> -8<sup>th</sup> October 2015
- Historical Development and Hydrological Changes to a Coastal Wetland in South Trinidad, Paper presented at the 1st Integrated Water Resource Management Symposium, UWI St Augustine, June 2015
- Integrating Climate Change Adaptation into Coastal Zone Management. Paper Presented at UNDP Caribbean Form, Port of Spain, May 2015
- Regional Expert at the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Scoping meeting on Regional Assessments 17<sup>th</sup> – 22<sup>nd</sup> August, UNESCO- Paris, France
- Expert Group Meeting Implementing Rio+20: Integrated Planning for Sustainable Coastal Area Management in the Caribbean Region on 17-18 March 2014, Port of Spain, Trinidad.
- Caribbean Workshop on Climate Services / Caribbean Climate Outlook Forum hosted by the Caribbean Meteorological Services, POS, Trinidad May 2013
- Governance of sustainable development and biodiversity: intersecting perspectives on a few Caribbean experiment Symposium hosted by the Centre de recherche sur les pouvoirs locaux dans la Caraïbe in Martinique, April 2013.
- Eucarinet/ Eulace: Climate Change and Biodiversity Dialogue Workshop 22-23 April, 2013 in Panama City, Panama.
- Restoration of a mangrove forest in Point Lisas, Trinidad 1<sup>st</sup> Guyana Mangrove Forum – Restoring and Managing Mangrove Ecosystems in a Changing World April 11-13<sup>th</sup>, Georgetown, Guyana. Hosted by the Guyana Mangrove Restoration Project
- Building Climate Change Adaptation into Integrated Coastal Zone Management (ICZM) in Caribbean Small Island Developing States, GEF Small Grant Programme, Regional

Workshop on Community Climate Change Adaptation for the Caribbean SIDS Trinidad and Tobago, 6-9 March, 2013

**CONFERENCES/ SYMPOSIA (cont'd)**

- IDB's Climate Change Regional Policy Dialogue - "How to Mainstream Climate Change Adaptation into a Country's Priority Sectors of Action" September 20-21, 2012, Dominican Republic.
- Trinidad and Tobago: An opportunity to adapt to Climate Change using an Integrated Coastal Zone Management approach, International Symposium 'Our Thirsty Planet' Pacific Lutheran University, Washington State, USA. Feb 23-24<sup>th</sup> 2012
- The Structure and Productivity of the *Thalassia testudinum* community in the Bon Accord Lagoon, Tobago. Paper presented at the Association of Marine Laboratories in the Caribbean (AMLC) 31<sup>st</sup> Scientific Meeting in Trinidad, July 14-18<sup>th</sup> 2003
- Biomass, litterfall and Decomposition rates for the fringed Rhizophora mangle forest lining the Bon Accord Lagoon, Tobago. Paper presented at the Association of Marine Laboratories in the Caribbean (AMLC) 31<sup>st</sup> Scientific Meeting in Trinidad, July 14-18<sup>th</sup> 2003
- Numerical hydrodynamic model for the Bon Accord Lagoon/ Buccoo Reef, Tobago, West Indies. Paper presented at the Association of Marine Laboratories in the Caribbean (AMLC) 32<sup>nd</sup> Scientific Meeting in Curacao, June 13-17<sup>th</sup> 2005

## REFERENCES

**Gerard Alleng**

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