



DEPARTMENT OF LIFE SCIENCES

Dr. Dwight Robinson Head Of Department

BSc UWI, PhD

OVERVIEW

Fortified by the committed response of the staff and students to the challenges induced by the pandemic and a difficult financial situation, the Department was able to take some bold steps toward continuing the process of improving its fitness for purpose, at all time building on the lessons learnt throughout the journey. We continued the process of adjusting the modality of the delivery of our courses by optimizing the use of the virtual platform for lectures and were able to restore the field-based components of our advanced courses. The reinstatement of the field component of our teaching required great financial sacrifice as we had to reduce the number of student per group, thus requiring us to increase the number of field visits. However, we deemed it necessary as a survey of our advanced level students indicated a strong desire to reengage in field activities to enhance their learning as well as to help them to deal with the mental stress associated with living under the conditions imposed as a result of the pandemic. Our efforts at prioritizing the research activities of the Department to align them with the needs of the region continued with an enhanced effort to develop collaborative partnerships with local, regional and international agencies and institutions. These partnerships resulted in the initiation of joint research activities involving faculty and students, and we were able to share the knowledge and experience with the wider scientific community and the public through several joint seminars and workshops activities with the wider scientific community. In an increased effort to have ecological data generated by the department used to inform policies and actions that would result in the conservation and sustainable use of the local and regional environment, members of the Department engaged stakeholders

and various interest groups by participating in discussion forums, training seminars and workshops organized by different entities.

A highlight of the year was the celebration of the 25th anniversary of the formation of the Department of Life Sciences in 1996 from a merger of the former Department's of Botany and Zoology, under the theme 'Honouring the Past, Showcasing the Present, Shaping the Future.' The celebration was launched on December 3, 2021 and included a panel discussion on the theme "The Importance of the Blue and Green Economy in Post-Pandemic Recovery.' Additional activities involved the launch of a time capsule, special lectures and seminars, RUM (Reason, Uncover, Motivate) and Lyme sessions and field excursion. The work of our Director for the Centre for Marine Sciences, Professor Mona Webber, was recognised nationally as she was awarded the Musgrave gold medal for her contribution in the field of Science.

Access

STUDENTS

Approved changes to our programmes and majors were implemented at the start of the academic year. There were some minor challenges with students being able to access their preferred elective courses. Our UG Coordinators were able to manage the situation quite well, by guiding the students to alternate courses. The feedback from the student re these changes has been positive as they indicate the changes have resulted in increased flexibility. The Department's effort to engage potential students continued through our participation in the Faculty's CAPE workshop programme. We were able to interact directly with approximately 380 CAPE level high school students during these workshops.

Thirteen students were inducted into the Life Sciences Honours Society based on their outstanding academic performance during the academic year. They were Bethany Dean, Jodi-Kaye Davis, Noel Ellis, Jhada Haughton, Thea-Moy Hill, Le'Anne Ledgister, Kathryn Gooden, Matthew-Pierre Rogers, Sashell Nelson, Crystal Scott, Jordan Desousa, Nahida Zaman and Nicholas Lee. Six students were awarded prizes at the Faculty of Science and Technology Annual Awards Ceremony for outstanding performance in specific subject areas. They were Jay Marine Spence who received the Don Skelding prize, Nicholas Lee who received the Charlotte Goodbody and Avi-

nash Potluri prizes, Kareen Barnett who received the Devi Prasad prize, Le'Anne Ledgister who received the Sasikala Potluri prize, Shantay Burton who received the Lloyd Coke prize, Kacia Brown who received the Vincent Hugh McKie prize and Matthew-Pierre Rogers who received the Ivan Goodbody Prize.

PUBLICATIONS

The Department continued its effort to improve the quantity and quality of scholarly output through the Research and Publication Committee. In an effort to improve the research and publication culture in the Department, the Committee hosted several research group meetings and a writing retreat at the end of semester 2. This resulted in an increase in research activities and collaboration within the Department. Below is a list of publication for the reporting period.

Journal Articles

- Bam, W., Swarzenski, P.W., Maiti, K., Vassileva, E., Orani, A.M., Blinova, O., McGinnity, P., Adhikari, P.L., Haughton, M. and Webber, M., 2022. Scavenging of select radionuclides and trace elements by pelagic Sargassum in the Caribbean Sea. *Marine Pollution Bulletin*, 179, p.113658. <https://doi.org/10.1016/j.marpolbul.2022.113658>
- Benkeblia, N. (2021). In the landscape of SARS-CoV-2 and fresh fruits and vegetables: The fake and hidden transmission risks. *Journal of Food Safety* 41, e12898. <https://doi.org/10.1111/jfs.12898>.
- Benkeblia, N. (2022). Insights on fructans and resistance of plants to drought stress. *Frontiers in Sustainable Food System*, 6:827758. <https://doi.org/10.3389/fsufs.2022.827758>
- Brown M-D, Lindo J, Robinson R (2022) First record of exotic terrestrial flatworms (Tricladida: Geoplanidae) *Bipalium vagum* Jones & Sterrer, 2005 and *Dolichoplana striata* Moseley, 1877 with confirmation of *Platydemus manokwari* de Beauchamp, 1963 in Jamaica. *BioInvasions Records* 11(2): 373–382, <https://doi.org/10.3391/bir.2022.11.2.10>
- Brown M-D, Lindo J, Robinson R (2022) *Marisa cornuarietis* (Linnaeus, 1758) (Gastropoda: Ampullariidae): a new addition to the freshwater malacofauna of Jamaica with health and economic implications. *BioInvasions Records* 11(2): 440–448, <https://doi.org/10.3391/bir.2022.11.2.17>

- Tonon, T.; Machado, C.B.; Webber, M.; Webber, D.; Smith, J.; Pilsbury, A.; Cicéron, F.; Errera Rodriguez, L.; Jimenez, E.M.; Suarez, J.V.; Biochemical and Elemental Composition of Pelagic Sargassum Biomass Harvested across the Caribbean. *Phycology* 2022: 2, 204–215. <https://doi.org/10.3390/phycolgy2010011>.
- Candiece Duscent and Eric Hyslop. Length weight relationships and condition factor of *Sicydium* sp. (Gobiidae) from the Yallahs River and Swift River, Jamaica. *Caribbean J. of Science*. 52 (1): 24-33 (2022). <https://doi.org/10.18475/cjos.v52i.a3>.
- Carla Botelho Machado, Gina-Marie Maddix, Patrice Francis, Shanna-Lee Thomas, Jodi-Ann Burton, Swen Langer, Tony R. Larson, Robert Marsh, Mona Webber, Thierry Tonon. 2022. Pelagic Sargassum events in Jamaica: morphotype abundance, provenance, and influence of sample preparation on biochemical composition. *Science of the Total Environment* Vol. 817 (2022). <https://doi.org/10.1016/j.scitotenv.2021.152761>
- D.J. Amon, R.D. Rotjan, B.R.C. Kennedy, G. Alleng, R. Anta, E. Aram, T. Edwards, M. Creary-Ford, K.M. Gjerde, J. Gobin, L.-A. Henderson, A. Hope, R.K. Ali, S. Lanser, K. Lewis, H. Lochan, S. MacLean, N. Mwemwenikarawa, B. Phillips, B. Rimon, S.-A. Sarjursingh, T. Teemari, A. Tekiau, A. Turchik, H. Vallès, K. Waysang, K.L.C. Bell, *My Deep Sea, My Backyard: A Pilot Study to Build Capacity for Global Deep-Ocean Exploration and Research*, *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences*. <https://doi.org/10.1098/rstb.2021.0121>
- Khattar J, Calvo P, Vandebroek I, Pandolfi C, Dahdouh-Guebas F. (2022) Understanding interdisciplinary perspectives of plant intelligence: Is it a matter of science, language, or subjectivity? *Journal of Ethnobiology and Ethnomedicine* 18: 41, <https://doi.org/10.1186/s13002-022-00539-3>
- Klein, A., Rychert, M., & Emanuel, M. A. (2022). Towards social justice and economic empowerment? Exploring Jamaica's progress with implementing cannabis law reform. *Third World Quarterly*, 1-19. <https://doi.org/10.1080/01436597.2021.1989300>
- Lee. Simone, Hall. G and Trench. C (2022) The role of nature-based solutions for disaster resilience in coastal Jamaica: current and potential applications for building back better First published: 03 May 2022 <https://doi.org/10.1111/disa.12539>
- =Rodriguez-Silva, Rodet, Montraí Spikes, Manuel Iturriaga, Kerri-Ann Bennett, James Josaphat, Patricia Torres-Pineda, Stefan Bräger, and Ingo Schlupp. "Feeding strategies and diet variation in livebearing fish-

es of the genus *Limia* (Cyprinodontiformes: Poeciliidae) in the Greater Antilles." *Ecology of Freshwater Fish* (2021). <https://doi.org/10.1111/eff.12638>

- Shellock, R.J., Cvitanovic, C., Mackay, M., McKinnon, M.C., Blythe, J., Kelly, R., van Putten, I.E., Tuohy, P., Bailey, M., Begossi, A., Crona, B., Fakoya, K.A., Ferreira, B.P., Ferrer, A.J.G., Frangoudes, K., Gobin, J., Goh, H.C., Haapasaari, P., Hardesty, B.D., Häussermann, V., Hoareau, K., Hornidge, A-K., Isaacs, M., Kraan, M., Li, Y., Liu, M.L., Lopes, P., Mlakar, M., Morrison, T., Oxenford, H., Pecl, G., Penca, J., Robinson, C., Selim, S., Skern-Mauritzen, M., Soejima, K., Soto, D., Spalding, A.K., Vadrot, A., Vaidianu, N., Webber, M., Wisz, M. 2022. Breaking down barriers: The identification of actions to promote gender equality in interdisciplinary marine research institutions. *One Earth* 5, 1–22 <https://doi.org/10.1016/j.oneear.2022.05.006>. Published June 2022.
- Stephenson, Kimberly, Byron Wilson, Michael Taylor, Kurt McLaren, Rick van Veen, John Kunna, and Jayaka Campbell. 2022. "Modelling Climate Change Impacts on Tropical Dry Forest Fauna" *Sustainability* 14, no. 8: 4760. <https://doi.org/10.3390/su14084760>
- Smith, T-A., Vásquez-Martínez, J., Mellado-Mojica, E., Vaidya, K., Lopez, M. G. and Benkeblia, N. (2022). Profiling of primary metabolites of *Averrhoa carambola*, *Spondias dulcis* and *Syzygium malaccense* fruits revealed underpinning markers during "on tree" maturation and ripening stages. *Advances in Horticultural Science*, 36(1):13-26.
- Tonon, T.; Machado, C.B.; Webber, M.; Webber, D.; Smith, J.; Pilsbury, A.; Cicéron, F.; Herrera- Rodriguez, L.; Jimenez, E.M.; Suarez, J.V. Ahearn, M., Gonzalez, F. and Allen, M.J. 2022. "Biochemical and Elemental Composition of Pelagic Sargassum Biomass Harvested across the Caribbean". *Phycology* 2 (1): 204–215. <https://doi.org/10.3390/phycology2010011>.
- Vardeman E, Vandebroek I (2021) Caribbean women's health and transnational ethnobotany. *Economic Botany*. Sep 10; 1-22. <https://doi.org/10.1007/s12231-021-09526-3> **Edited volumes**
- Pieroni A, Fontefrancesco MF, Vandebroek I (Eds.) (2021). *Traditional Food Knowledge: New Wine Into Old Wineskins?* Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88971-831-3

Book Chapters

- Benkeblia, N. (2022). Metabolomics and sustainable agriculture: Concepts, applications and perspectives. In: *Bioinformatics in Agriculture:*

in the Next-Generation Sequencing Era. P. Sharma, D. Yadav, and R. K. Gaur (Eds.). pp 123-138. Elsevier: Amsterdam.

- Technical Report/Scientific Reports/White Papers
- Marcia Ford - Reflections on the Future for Oceans and Coral Reefs” that appeared in the MEGJC’s Climate Change Division Newsletter CC-Connect. COP-26: Together for Our Planet (Vol. 4, Issue 2, December 2021).

Conference proceedings

- Abuali J, Vardeman E, Vandebroek I, Kennelly E (2022) Ethnopharmacology of Bejuco de Indio (*Gouania lupuloides*), a Caribbean Medicinal Plant Used for Oral Health Throughout the Caribbean. The Joint conference of the Society for Economic Botany (SEB) and the International Society of Ethnobiology (ISE), The UWI Mona, Jamaica (31 May - 2 June 2022).
- Tizazu Gebre, Chinthapalli Bhaskar Rao, Frederick Boyd, Machel Emanuel (2022) Ethnobotanical study of traditional medicinal plant species and indigenous knowledge by the Konso people, South Ethiopia. The Joint conference of the Society for Economic Botany (SEB) and the International Society of Ethnobiology (ISE), The UWI Mona, Jamaica (31 May - 2 June 2022).
- Vardeman E, Vandebroek I, Kennelly E (2022) Ethnopharmacology of medicinal plants for Caribbean women’s health. The Joint conference of the Society for Economic Botany (SEB) and the International Society of Ethnobiology (ISE), The UWI Mona, Jamaica (31 May - 2 June 2022).
- Vardeman E, Vandebroek I, Kennelly E (2022). Ethnopharmacology of *Argemone mexicana* L. for Caribbean Women’s Health. American Society of Pharmacognosy Conference abstract, Charleston, SC (23-28 July 2022).

Alignment

Our interactions with local communities and partnership with local, regional and international groups, continued as we increased our effort to align our research and outreach activities with the needs of the nation and the region. Partners included the Food and Agriculture Organization of the United Nations, SMART Caribbean Business Academy, REDDplus, Caribbean

Coastal Area Management Foundation, the Coral Restoration Consortium, the Jamaica Environment Trust, the National Environment and Planning Agency, the Planning Institute of Jamaica, the Pesticides Control Boards of the Caribbean (CGPC), the Pesticides Control Authority of Jamaica and The Ministry of Economic Growth and Job Creation/Climate Change Division.

PUBLIC SERVICE

Our staff members continued their participation in, and service to, the wider society by their membership on committees and boards outside of the University. These are listed below.

Prof. Nouredine Benkeblia

- Assessor of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).
- Associate Editor, Canadian Journal of Plant Science
- Associate Editor: P. Journal of Tropical Agricultural Science
- Academic Editor, PLOS Climate
- Member of the Canadian Society of Horticultural Science
- Member of the Canadian Society of Agronomy
- Member of the Crop Science Society of America
- Member, Agricultural Science, University Council of Jamaica (UCJ).
- Member of the International Union of Conservation of Nature, (IUCN). Commission on Ecosystem Management.
- Member of the Regional Economic and Scientific Commission in the Caribbean (CREES) of The Francophone University Agency (AUF) (2022 – 2025).
- Member of the Commission on Ecosystem Management (CEM) Editor/Reviewer of the International Panel on Climate Change (IPCC)
- Topic Editor: Frontiers in Soil Sciences. Climate Change Mitigation Strategies for Sustainable Crop Production in Sub-Saharan Africa.
- Topic Editor: Frontiers in Genetics. Advanced Genetics and Genomics and Climate Change Resilient Crops: Roots, Tubers, and Cereals.
- Review Editor: Frontiers in Plant Science
- Review Editor, Inter-Governmental Panel on Climate Change (IPCC).

Dr. Frederick Boyd

- Member, Board of Education, East Jamaica Conference of SDA
- External Examiner, Joint Board of Teacher Education (JBTE)

- Member, Accreditation Panel (Biological Sciences), University Council of Jamaica
- Member, American Society of Plant Biologists

Dr. Machel Emanuel

- Member of the International Society for Horticultural Sciences
- Member of the American Society for Horticultural Sciences
- Member of International Technical Committee for development of standards for cannabis in Jamaica
- Vice-Chair of the Bureau of Standards Jamaica's Cannabis National Technical Committee Chairman of the Product Development, Cannabis Industry Development Taskforce Sub-committee.

Mrs. Marcia Ford

- Chairperson, National Biodiversity Clearing House Mechanism Steering Committee Member, The Jamaica Statistical Society Member, Global Coral Reef Monitoring Network -Caribbean Steering Committee Member, International Society for Reef Studies Member, Technical Advisory Committee for Component 3 of the Pilot Program for Climate Resilience Reviewer, The International Journal of Tropical Biology and Conservation (Revista de Biología Tropical). Member, Steering Group of "Coast-Predict" (www.coastspredict.org).

Dr. Tannice Hall

- Member, Natural History Society of Jamaica

Dr. Denneko Luke

- Member, NEPA Biodiversity Committee

Dr. Suzanne Palmer

- Member, Association of Marine Laboratories of the Caribbean (AMLC)
- Member, International Society for Reef Studies (ISRS)
- Board Member, Association of Marine Laboratories in the Caribbean
- Board Member, Association of Marine Laboratories in the Caribbean (AMLC) institutional rep for the UWI PRML

Dr. Chinthapalli Bhaskar Rao

- Member, Academic Council, AP Agricultural University
- Fellow, Department of Biotechnology (DBT), New Delhi, India
- Fellow, Institute of Life Sciences, Mizzou, USA

- Fellow, Volkswagen Stiftung, Hannover, Germany
- Member, Biological Society of Ethiopia.
- Member, Indian society of Chemists and Biologists.
- Member, Metabolomics Society and Plant Metabolomics.
- Reviewer of Journal of Food Composition and Analysis, Elsevier Journals
- Reviewer of African Journal of Food Science, Academic Journals
- Reviewer of Research in Biotechnology, Update publishing house

Dr. Dwight Robinson

- Director, Caribbean Academy of Sciences, Jamaica Chapter
- Director, College of Agriculture Science and Education
- Director, Nature Preservation Foundation
- Chair, Pesticides Control Authority Pesticides Review Committee
- External Assessor for the Registration of Pesticides by the Pesticides Control Authority

Prof. Ralph Robinson

- Board of Directors, Jamaica Agricultural Development Foundation
- Scientific Member, The National Bioethics Committee of Jamaica
- Member, Bioethics Society of the English-Speaking Caribbean
- Member, Standards Advisory Committee, The University Council of Jamaica.
- Justice of the Peace, St. Andrew, Jamaica
- Member, Justices of the Peace and Lay-Magistrates' Association of St Andrew, Jamaica
- Member, American Society of Parasitologists
- Member, Training Advisory Committee for UWI/The University at Buffalo's D43 application (Global Infectious Diseases Research Training Program) to the Fogarty International Center, National Institutes of Health, USA
- Volunteer Expert on the Clinical Research Support Team for the Jamaica Emerging Infectious Diseases Research Center at the University at Buffalo

Prof. Paula Tennant

- Member, American Phytopathological Society
- Member, Caribbean Academy of Sciences, Jamaica Chapter
- Member, Jamaica Society of Scientists and Technologists

Dr. Camilo Trench

- Coordinator/Member, Alloa Fisherman's Cooperative: Discovery Bay Special Fisheries Conservation Area Steering Committee
- Member, National Fish Sanctuaries Network
- Member, UWI's representative, National Marine Parks Advisory Board
- Board Member, Association of the Marine Labs of the Caribbean (AMLC) institutional rep for the UWI CMS/DBML
- Member, Project Steering Committee for IWeco National Sub-Project 1.4 (UWI's representative) "Biodiversity Mainstreaming in Coastal Landscapes within the Negril Environmental Protection Area of Jamaica"
- Member, Technical Advisory Committee for IWeco National Sub-Project 1.4 Component 2
- Member, The Moneague College's Program Advisory Committee (PAC) for the Associate of Applied Science in Agro-processing
- President, Ferncourt High School Alumni Association

Dr. Julie Tsatsaros

- Member, Society for Environmental Restoration (SER)
- Member, Society for Freshwater Science
- Member, North American Association of Environmental Educators
- Member, American Society for Environmental History
- Board Member, Hermits Peak Watershed Alliance, New Mexico, USA

Dr. Ina Vandebroek

- Editor-in-Chief, Economic Botany
- Topic Editor, Traditional Knowledge in Food Activism and Governance, Frontiers in Sustainable Food Systems
- Deputy Editor, Journal of Ethnobiology and Ethnomedicine
- Editorial Board Member, Checklist in Ethnobiology
- Editorial Board Member, Ethnobiology and Conservation
- Member of the Alliance for Diversity and Inclusion in Ethnobiology (ADIE)
- Member, Biocultural Collection Managers Group (USA)
- Council Member, Society for Economic Botany (USA)

Prof. Mona Webber

- Chair, NEPA Biodiversity and Game Bird Committee
- Member, National Council on Ocean and Coastal Zone Management (NCOCZM)

- Chair, Diving Sub-Group, NCOCZM
- Member, CITES (NEPA-Scientific Authority)
- Member, NEPA Technical Review Committee (TRC)
- Member, Jamaica Conservation Partners (C.B. Facey Foundation)
- Member, Science and Technology Advisory Committee of the Jamaica National Commission for UNESCO
- Member, National Fisheries Advisory Council
- Member, Scientific and Technical Sub-Commission of the Caribbean Sea Commission (CSC)
- Member, Natural Resource Conservation Authority (NRCA) Board

AGILITY

Through continued collaborative efforts and partnerships with local, regional and international organisations the Department was able to attract some grant funded projects, despite the downturn of such activities as a result of the pandemic. Some of the grant-funded activities and partnerships that were initiated during the 2021-22 academic year are below.

Forestry Department of Jamaica under the Ecosystem-based Adaptation (EbA) in Latin America and the Caribbean Project to restore mangroves situated in Port Royal. J\$3,302,236.04

The National Conservation Trust Fund of Jamaica (NCTFJ) grant for Water Quality Assessment of Special Fisheries Conservation Areas. J\$5,000,000.

Sandals Resorts International for North Coast Mangroves Restoration and Conservation Project with special focus on Salt Marsh (Falmouth), Trelawny. J\$11,400,000.

The National Fisheries Authority (NFA), to train Jamaican fishers in SCUBA diving. J\$2,008,800.

The Pesticides Control Authority (PCA), Ministry of Health to assess the pattern and use of agricultural pesticides and their residues in the Jamaican environment. J\$19,662,500.

Planning Institute of Jamaica (PIOJ) to conduct a Rapid Ecological Assess-

ment (REA) of the Wagwater, Rio Nuevo and Rio Bueno/White River Watershed Management Units. \$J42,000,000.

National Environment and Planning Agency (NEPA). Palisadoes Islets Mangrove Restoration Project. J\$4,502,916.

Jamaica Conservation Partners (JCP). Queen Conch Induced Spawning by Density Manipulation. US\$23,600

National Fisheries Authority (NFA). 2021 Queen conch population survey at Pedro Bank. J\$17,050,000.

National Geographic Society: Tracing the plant diversity and origins of Jamaican root tonics, a symbol of biocultural heritage. USD 19,650

Mohamed bin Zayed Species Conservation Fund: Reassessing the conservation status of *Cinnamodendron corticosum* (Canellaceae): A wild and popularly used spice tree in Jamaica. USD 11,000