



DEPARTMENT OF LIFE SCIENCES

Departmental Report August 2020 - July 2021

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BSc UWI, PhD

WORK OF THE DEPARTMENT

Much of the effort of the Department during the 2020/21 academic year was focused on adjusting the modality of the delivery of our courses, which all have significant laboratory and/or field-based components. Our staff members responded to the call to ensure that we made the required adjustments to engage our students in a manner that would guarantee the quality of the instructions they received and in a virtual and physical environment that would allow them to have a pleasant and enriching student experience. This required us to utilize a blended approach for the delivery of most of our courses, which involved the use of virtually supervised off-site activities as well as supervised face-to-face laboratory and field exercises conducted in strict adherence to the Government's COVID-19 guidelines. While the worldwide COVID-19 pandemic posed major challenges to our activities and operations, it provided us with several opportunities that we were able to take advantage of. Our efforts to increase access to the Department was boosted by the use of the virtual space, as we were able to interact with much larger numbers of individuals during virtual outreach activities than we were able to reach previously in face-to-face interactions. While many of our students found it challenging to adjust to the sudden change in the mode of delivery of our courses, and expressed a preference for the face-to-face mode of delivery, many continued to perform well and five new students attained levels of performance that resulted in them being inducted into the Life Sciences honour society.

Our Research and Publications Committee continued to lead the process of prioritization of the research activities of the Department to align them with the needs of the region. An important aspect of this process was the development of collaborative partnerships and meaningful engagements with local, regional and international agencies and institutions. Through these partnerships, the department was able to engage in several research activities and host seminars and workshops to share the knowledge generated through the research 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 major activity this year was the rationalization of the Life Sciences establishment to improve staff morale and efficiency. Through an ongoing budget review process, we were able to identify areas of weakness and inefficiencies in our operations that were contributing to the financial non-viability of the Department. Several activities have been realigned and operational procedures adjusted in order to improve the financial health of the Department.

ACCESS

STUDENTS

During the prior academic year, the Department made requests for approval of changes to our programmes and majors. Some requests were denied by the Board for Undergraduate Studies (BUS), with clear reasons for denying the request. This forced the Department to conduct a second review based on the comments received from BUS, which were found to be valid and would further increase the flexibility and relevance of our programmes. The programmes were adjusted, resubmitted and were approved for implementation. These changes should impact positively on student development and the student experience. The Department continued its effort to engage potential students through our participation in the Faculty's CAPE workshop programme with over 1,283 CAPE level high school students participating in workshops held during the reporting period. Eight students were inducted into the Life Sciences Honours Society based on their outstanding academic performance. They were Kareen Barnett, Nikkayla Barnaby, Jeffery Morris, Nasya Jones and Paul Collins who are first time inductees, and Matthew Rogers, Shelby Kerr and Truddi Clarke, who were second time inductees. Six students were awarded prizes at the Faculty of Science and Technology Annual Awards Ceremony for outstanding performance in specific subject areas. They were Kareen Barnett, who received the Don Skelding prize,

Matthew Rogers who received the Charlotte Goodbody and Avinash Potluri prizes, Nikkayla Barnaby who received the Devi Prasad prize, Nahida Zanian who received the Sasikala Potluri prize, Ronaldo Salmon who received the Lloyd Coke prize and Nasya Jones who received the Vincent Hugh McKie and Ivan Goodbody prizes.

PUBLICATIONS

The Department continued its effort to improve the quantity and quality of scholarly output through the Research and Publication Committee that was established to improve the research and publication culture in the Department by advising on the Department's research and publication policy and plans, monitoring and reviewing calls for appropriate research proposals, providing oversight and guidance during the application processes, providing guidance, mentorship and support for activities that further the promotion and development of research and publication, and advising on the prioritization of the Department's research resources. Below is a list of publication for the reporting period.

Benkeblia, N. (2020). "Common pre- and post-harvest diseases of vegetable crops in Jamaica." CABI Reviews 15: 1-7. doi: 10.1079/PAVSNNR202015057.

Benkeblia, N. (2021). Physiological and Biochemical Response of Tropical Fruits to Hypoxia/Anoxia. Frontiers in Plant Sciences 12: 670803. <https://doi.org/10.3389/fpls.2021.670803>.

Blythe-Mallett A, Aiken KA, Segura-Garcia I, Truelove NK, Webber MK, Roye ME, et al. 2021. "Genetic composition of queen conch (*Lobatus gigas*) population on Pedro Bank, Jamaica and its use in fisheries management." PLoS ONE 16 (4): e0245703. <https://doi.org/10.1371/journal.pone.0245703>

Guyah, N., Webber, M., & Prospere, K. (2021). An assessment of the larval fish diversity within a coastal marine reserve: Larval fish diversity within a marine reserve. Regional Studies in Marine Science, 43, 101655.

Heller, C., Michelutti, N., Burn, M., Palmer, S.E., Smol J.P. (2021) The response of diatom assemblages in a Jamaican coastal lagoon to hurricane and drought activity over the past millennium. The Holocene. 1-7.

<https://doi.org/10.1177/09596836211019095>

Marcos A. Caraballo-Ortiz, **Keron C. St. E. Campbell**, Sashalee J. Cross. "A new *Pisonia* (Nyctaginaceae) from Jamaica, with an updated list of species in the genus and a key to the West Indian taxa." Webbia. Journal of Plant Taxonomy and Geography 76(1): 53-63. doi:10.36253/jopt-10018.

Marta Rychert, **Machel Anthony Emanuel**, Chris Wilkins. "Foreign investment in emerging legal medicinal cannabis markets: The Jamaica case study." Globalization and Health 17:38. <https://doi.org/10.1186/s12992-021-00687-3>.

McDonald, Nadia; Machel A. Emanuel and Dwight E. Robinson. (2021). "The efficacy of alternative (biorational) insecticides in suppressing damage caused by insect pests affecting callaloo, Amaranth xanthosoma and pak choy, Brassica rapa, production in Jamaica." Horticulture International Journal. 5: (2) - (2021). DOI: <https://doi.org/10.15406/hij.2021.05.00203>.

Palmer, S.E., Burn, M.J. & Holmes, J. (2020) A multiproxy analysis of extreme wave deposits in a tropical coastal lagoon in Jamaica, West Indies. Natural Hazards. <https://doi.org/10.1007/s11069-020-04284-2>

Rychert M., **Emanuel M. A.** (2020). One size does not fit all: issues in the establishment of a therapeutic cannabis market under Jamaica's Dangerous Drugs Amendment Act 2015. International Journal for Drug Policy DOI: 10.1016/j.drugpo.2020.102945

Book Chapters

Robinson, Ralph (2020). Parasitism and Pregnancy: A Caribbean Perspective. In: Obstetrics and Gynecology Practice in the West Indies. Chapter 20. Bassaw, B. and Fletcher, H. (Eds.)

Taylor, M., Stephenson, T. and **Webber, M.** 2020. The implications of Climate Change for Blue Economies in the Wider Caribbean. IN: The Caribbean Blue Economy; edited by Peter Clegg, Robin Mahon, Patrick McConney and Hazel A. DTP/9780367263676_text.3d.

ALIGNMENT

In an effort to align its activities to the needs of local and regional communities, the Department continued its engagement and partnership with local, regional and international groups. Local partners included the Salt Marsh Fishers, ALLOA Fishermen's Cooperative, Farm Town Farmers Groups, Douglas Castle Benevolent Association, Oracabessa Foundation, Sandals Foundation, Jamaica Conservation Partners, Queens Highway/Bengal Citizens Association, National Environment and Planning Agency, Pesticides Control Authority, the Planning Institute of Jamaica and the Food and Agriculture Organization of the United Nations.

Dr. Camilo Trench and Mr Hugh Small were feature presenters on a nationally aired and wide-reaching documentary by Television Jamaica, named "Where have the mangroves gone?". The UWI Discovery Bay Marine Laboratory Hyperbaric Treatment Facility (renamed to the Peter Gayle Hyperbaric Treatment Facility) staff also continued to advocate and educate on Safe Diving practices, as seen in numerous press releases and prime time news features this year. During the reporting period the Centre for Marine Sciences under the leadership of Professor Mona Webber, was extremely active in engaging local and regional stakeholders on matters related to coastal zone management, marine pollutions and the blue economy. This was a continuation of years of involvement in research and advocacy in such matters by Professor Mona Webber. Her effort and contribution were recognized with her being awarded the Musgrave Gold medal. Through a partnership with the Food and Agriculture Organization of the United Nations and the Group of Pesticides Control Boards of the Caribbean (CGPC), the Department is contributing to a regional effort to reduce the use of highly hazardous pesticides in the region. The Department partnered with the Queen's University Biological Station to hold a joint virtual symposium to discuss issues of water and aquatic environments in the Caribbean and the St. Lawrence-Great Lakes Watershed. The intent of this inaugural symposium was to deepen research and teaching collaborations between Queen's University and the University of West Indies, and to identify issues around water quality, distribution and security, as well as issues relating to aquatic ecosystem health and aquatic biodiversity conservation in Jamaica and other Caribbean nations. Two of our graduate students presented at the symposium. Information relating to their presentations are presented below.

Gina-Marie Maddix and Mona Webber 2021. Morphological and potential genetic variability in *Acropora palmata* populations across Jamaica's north coast. Fulford Water Symposium February 18 -19, 2021 (on-line).

Dexter-Dean Colquhoun, Gale Persad and Mona Webber 2021. An assessment of water quality and plankton in key areas of the East Portland Special Fishery Conservation Area Jamaica. Fulford Water Symposium February 18 -19, 2021 (on-line).

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

Associate Editor, Canadian Journal of Plant Science

Academic Editor, PLOS Climate

Member of the Canadian Society of Plant 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.

Editor/Reviewer of the International Panel on Climate Change (IPCC)

Assessor of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Member of the Regional Scientific Experts Commission for the Caribbean, Francophone University Agency (AUF).

Justice of the Peace, St Andrew, Jamaica

Dr. Frederick Boyd

Liaison for Department of Life Sciences / Nature Preservation Foundation partnership

Member, Board of Education, East Jamaica Conference of SDA

Member, Research & Development and Seed Production Subcommittee, National Organic Agriculture Steering Committee (NOASC)

External Examiner, Joint Board of Teacher Education (JBTE)

Member - Standards Subcommittee, Jamaica Organic Agricultural Association (JOAM)

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 "CoastPredict" (www.coastspredict.org).

Dr. Tannice Hall

Member, Natural History Society of Jamaica

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. Dwight Robinson

Director, Caribbean Academy of Sciences, Jamaica Chapter

Director, College of Agriculture Science and Education

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 represen-

tative) "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 (UWI's representative) improvement of water, land, ecosystems and biodiversity resources of the Negril Morass, taking into account climate change, sensitive ecosystems and Ecosystem services President, Ferncourt High School Alumni Association

Member, The Moneague College's Program Advisory Committee (PAC) for the Associate of Applied Science in Agro-processing

President, Ferncourt High School Alumni Association

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 with local and international partners, the Department was able to attract several grant funded projects. Some of the grant-funded activities and partnerships that were initiated during the 2020-21 academic year are below.

- Partnership with the Mona GeoInformatics Limited. 'Implementation of Eco-System Adaptation Measures for Kingston Harbour Communities (KHEAM)' valued at USD\$40,000.
- Partnership with the National Environment and Planning Agency. 'Ecological Assessment - Integrated Management of the Yallahs and Hope River Watershed Management Areas Project' valued at J\$20,410,854.09.
- Food and Agriculture Organization of the United Nations (FAO). 'Disposal of Obsolete Pesticides including POPs. Promotion of Alternatives and Strengthening Pesticides Management in the Caribbean' valued at US\$59,235
- National Environment and Planning Agency (NEPA). 'Palisadoes Islets Mangrove Restoration Project' valued at J\$4,502,916.
- Jamaica Conservation Partners (JCP). Queen Conch Induced Spawning by Density Manipulation at the DBML. US\$23,600
- National Fisheries Authority (NFA). 2020 interim Queen conch survey at Pedro Bank. J\$7,264,400.