

DEPARTMENT OF LIFE SCIENCES



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OVERVIEW

In academic year 2013/2014, 102 students graduated with BSc degrees in Biology – three with first class honours and 22 with upper second class honours; 12 candidates were awarded higher degrees. Faculty members published three books, a total of 24 refereed articles and gave 22 conference presentations. The Department (DLS) continued its curriculum review process; this in an effort to provide high quality education and training for students in all areas of Biology and to fulfil the mission of the UWI for excellence in teaching, research and output.

WORK OF THE DEPARTMENT

Undergraduate Curriculum

This past year DLS acquired approval for the amendment to four of its B.Sc. single majors and minors for first offering in 2014/2015. The primary goal of the revision is to strengthen the programmes while

giving students greater flexibility in planning and completing their course selections. The revised programme is premised on (i) four undergraduate majors in Animal Biology, Marine Biology, Plant Biology and Terrestrial and Freshwater Ecology, (ii) four minors in Animal Biology, Coastal Ecosystems, Plant Biology and Terrestrial and Freshwater Ecology, and (iii) an expanded credit requirement to increase the breadth of material covered in Majors and Minors. The department will continue to offer the single major in Horticulture and the BSc Programmes, Environmental Biology, Experimental Biology and Biology with Education.

STUDENT ENROLMENT

The numbers of students enrolled in Level 1 Life Sciences courses in 2013/14 were maintained at the high levels we have been experiencing over the past five years. In all, 572 students were enrolled in the Biology courses offered in semester 1 and 503 in courses offered in semester 2. As such the Saturday laboratory stream, started in 2011/2012, was again offered in 2013/2014 and this, along with repeat evening lectures facilitated part-time student registrations.

The overall enrolment in Level 2 courses decreased slightly in 2013/2014. Registrations in the core courses Research Skills and Practices in Biology and Principles of Ecology which increased from –150 students in 2011/12 to –200 in 2012/2013 were at 174 and 192, respectively, in 2013/2014. Nonetheless, these numbers necessitated the addition of lab streams and larger lecture rooms in the faculty were time-tabled.

At Level 3, the numbers were higher (2–50%) in about half of the course offerings compared to the previous year with a maximum of 67 in the seminar course, Advanced Topics in Animal Science, which was taught for the second time in 2013/14.

STUDENT PERFORMANCE

The Level 1 courses maintained good percentage passes in the 2013/14 academic year, but these were slightly lower than those obtained in the previous year, except in one of the three courses (i.e. BIOL1017).

Semester 1 courses (BIOL1017 and BIOL1018) averaged 66 and 70% pass, respectively, while semester 2 courses (BIOL1262 and BIOL1263) averaged 77% and 56%, respectively.

The performance of students at Level 2 was again extremely variable. The highest percentage pass (88%) was obtained for the course Research Skills and Practices in Biology while the lowest passes were obtained in Biological Evolution (39%) and the semester 2 Zoology courses Maintenance Systems in Animals and Coordination and Control in Animals (48 and 58% passes, respectively). The latter courses were reviewed last year and significant changes to their content and delivery made. Percentage passes of 73% and higher were obtained with most the courses (92%) at level 3.

Summer School

The DLS summer school was efficiently managed by our summer school coordinator, Dr. Gale Persad. A total of 528 students registered for and sat 40 courses. All courses were 'MEX exams-only' sittings of previously offered courses which were being made available to students who had passed the coursework component. Summer School continues to provide the opportunity for students to recover from failure, thus completing their degree in a timely fashion and has also become a source of income generation for the Department. While good percentage passes were maintained in BIOL1263 (71%), lower passes (41–58%) were obtained with the other three level 1 courses. Overall performance at levels 2 (36–77% pass except for ZOOL2404 with 18%) and 3 (72–100% pass) was found to be similar to that of students in the normal semesters. The summer semester also facilitated the offering of the Internship course which is difficult to schedule in the normal semesters. Some 24 students were placed in organizations across the island. The programme was coordinated by Dr. Eric Garraway, who is to be congratulated for an excellent job along with Mrs. Debbie Ann Brown. Twelve students registered for research projects over summer.

Graduate Programmes

The revised MSc in Marine and Terrestrial Ecosystems (MaTE) was offered to students for the 2013/14 academic year as one of the specializations under the Natural Resource Management (NRM) umbrella. The programme is delivered part time over two years. As in 2012/2013, the revised MSc in Plant Production and Protection (PPP) was not offered in 2013/2014 due to low enrolment. The department is presently considering a reorganization of the programme which will involve a change in the name to improve marketability and a change in the structure of the programme to increase its compatibility with other MSc programmes offered in the Faculty. The latter should allow for combined classes in 40% of the taught courses.

Graduate Research students

One PhD and four MPhil students commenced higher degree programmes in 2013/14. Five students received Graduate Scholarships: Kurt Prospere, PhD Forestry; Kimani Kitson-Walters, MPhil Marine Biology & Biotechnology; Nasheika Guyah PhD in Marine Sciences, Denise Chin PhD in Marine Sciences and Brahim Diop, MPhil Botany. Dexter-Dean Colquhoun, MPhil Marine Sciences, was awarded a scholarship from Sol Caribbean. Two MPhils successfully upgraded to PhDs.

Campus Committee for Graduate Studies and Research and the UWI Staff Development and Endowment Fund, Mona, facilitated the participation of graduate students at conferences. This generated the presentation of two papers and a total of three oral conference presentations and three poster presentations from students in 2013/2014. In addition, there were five graduate student publications in peer reviewed journals during the reporting period.

Four MPhil and three PhD students completed degrees in 2013/14. The degree specialization, names and supervisors of those awarded are given below.

MPhil Zoology

Jodi-Ann Elli (Supervisor – Dr. Eric Hyslop)

A study of fluctuating asymmetry and morphometric analyses as biomonitoring tools for examining the effects of population in Black River, St. Elizabeth, Plantain River, St. Catherine, Rio Grande, Portland and White River, St. Ann using freshwater shrimp species (Palaemonidae and Atyidae).

Marlon Beale (Supervisor – Dr. Eric Garraway)

Bird composition along a rainfall gradient in eastern Jamaica.

Tamia Harker (Supervisor – Professor Byron Wilson)

Status and conservation of Sea Turtles in Jamaica.

MPhil Environmental Biology

Denise Henry (Supervisor – Dr. Mona Webber)

Sea Urchin abundance and distribution in the Port Royal Cays area of Jamaica.

PhD Environmental Biology

Kerrine McDonald Senior (Supervisors – Professor Dale Webber/Dr. Mona Webber)

Environmental agreements – An examination of their effectiveness in the protection of marine resources in the Caribbean.

Minke Newman (Supervisor – Dr. Kurt McLaren)

Assessing the impacts of socioeconomic parameters on deforestation and habitat fragmentation in the forest of the Cockpit Country, Jamaica.

PhD Marine Sciences

Sean Townsend (Supervisor – Professor Dale Webber)

Phytoplankton and circulatory dynamics of newshore waters, Hellshire Coastline, Jamaica.

Cohorts of 3 and 17 (2011/2012 and 2012/2013) students are pursuing MSc Degrees in MaTE and Agricultural Entrepreneurship, respectively. Five students completed degrees in 2013/14. The degree specialization, names and supervisors of those awarded are given below.

MSc Marine & Terrestrial Ecosystems

Lorraine Fanan (Supervisor – Professor Dale Webber)

An assessment of the newly developed computer programme, MAEVIZ, as a tool for disaster risk management in earthquake resilience for the University of the West Indies, Mona, Jamaica

Lydia Morrison (Supervisor – Dr. Mona Webber)

An assessment of Rackham's Cay pioneer coral reef and algae community created as a result of widening the ship channel in Kingston Harbour, Jamaica.

Sian Carrington (Supervisor – Professor Dale Webber)

Some effects of the feeding behaviour of dusky damselfish (*Stegastes fuscus*) on transplanted coral and natural coral colonies at varying depths in Discovery Bay, Jamaica.

MSc Agricultural Entrepreneurship

Audley Facey (Supervisor – Professor Noureddine Benkeblia)

Designing an efficient irrigation system for vegetable farmers: Case study of Century Farm, Jamaica.

Warrel White (Supervisor – Dr. Kadamawe K'Nife)

Enhancing the systematic growth and development of Jamaica's vanilla industry through increased production.

STAFF MATTERS

The department continues to struggle to maintain the necessary complement of permanent, full-time lecturing staff in the face of losses due to retirement, resignation and secondment. Staff including scientific officers, technicians, gardeners and other ancillary staff must be commended for rising to this challenge and that of the increased numbers of students coupled with curriculum changes.

The 2013/2014 academic year saw the appointment of Dr. Tannice Hall to the post of Lecturer in Animal Physiology and the promotion of Dr. Kurt McLaren to the rank of Senior Lecturer. Dr. Suzanne Palmer temporarily filled the position of Coral Reef Biologist. Dr. Mona Webber returned from sabbatical leave at the end of the 2013/2014 academic year. The department said farewell to Mrs. Morris Spencer and Mr. Lloyd Gayle, who retired in March and August 2014 after 36 and 18 years of service, respectively, to the University.

It was with tremendous sadness that The Department bade farewell to Professor Emeritus of Zoology Ivan Goodbody, who passed on April 16, 2104. Professor Ivan Goodbody came to Jamaica in 1955 from the University of Aberdeen, to take up the post as Lecturer in Zoology at the then University College of the West Indies. He moved on to become Senior Lecturer in Zoology at University of the West Indies in 1962 and quickly became Professor and Head of the Department of Zoology in 1964, a post he retained until 1986. He then went on to become the founder and first Director, Marine Science Unit from 1986 to 1989. In his passing the Department, the Faculty, the University, the country and the discipline have lost a forerunner in Marine Sciences who has taught much, shared with many and will be remembered by even more (excerpt from a tribute written by D. Webber, M. Webber, K. Aiken).

Professor Nouredine Benkeblia started off the Faculty's series of Professorial inaugural lectures in 2013/2014 (October 17, 2013) with his lecture on, 'Contributing to fructans and fructo-oligosaccharide research in *Allium* species'. Professor Dale Webber presented his inaugural lecture entitled, 'Coastal Management in Jamaica: Monitoring, mentoring

and modelling’ on Thursday November 21, 2013 and Professor Byron Wilson’s lecture entitled, ‘Two likkle lizard and too likkle protection: Jamaica’s disappearing natural heritage’ was on May 9, 2014. Prof. Dale Webber presented his Grace Kennedy Foundation Professorial Chair Annual report as the James Moss-Solomon Snr. Chair in Environmental Management on Tuesday November 19, 2013.

Members of staff, Dr. Karl Aiken, Dr. Eric Hyslop, Dr. Dwight Robinson and Dr. Mona Webber, received awards for their outstanding teaching assessment scores at the Faculty Awards ceremony held on March 27, 2014. Special awards were presented to Professor Dale Webber, Dr. Mona Webber, and Dr. Karl Aiken in recognition of their appointment by the United Nations to its pool of experts to assist in the production of a World Ocean Assessment. This represents the first integrated global assessment of the state of the marine environment. Professor Byron Wilson is the recipient of the Jamaica Environmental Action Award (Wildlife Conservation category) from the Jamaica Environmental Trust (JET).

Six members of staff were recognized for their long service to the UWI on December 12, 2013. Mr. Frederick Boyd and Professor Byron Wilson for 15 years of service, Ms. Claudia Lewis, Mr. Patrick Lewis, and Dr. Catherine Murphy for 21 years, and Ms. Josephine Parchment for 30 years.

Port Royal Marine Laboratory (PRML)

The Port Royal Marine Laboratory continued to support teaching, research and outreach on the Campus by hosting UWI undergraduate and MSc classes, research students and staff from various departments on the campus. The number of users for the period included weekly visits of 53–60 Marine Ecology, Coral Reef Biology and Fisheries Ecology UWI Mona Campus students. In addition, more than half of the courses offered in Life Sciences were provided with specimens for laboratory classes confined to the campus due to size or the need for specialist equipment. PRML supported more than seven researchers/research students during the period.

PRML participated in 16 outreach activities for the year reaching over 2,000 members of the public. Of note, the Centre offered for the first time this year a Teacher symposium (March 4, 2014) aimed at assisting teachers in accomplishing objectives highlighted by CSEC and CAPE syllabuses, namely Biology and Environmental Science. The event introduced teachers to various tour and field activity packages that the PRML would offer to complement that which is being taught in the classroom. Some 21 teachers, representing 11 high schools (Calabar High School, Glenmuir High School, Jamaica College, Kingston College, Johnathan Grant High School, Mt. Alvernia High School, Pennwood High School, St. Andrew High School for Girls, St. Catherine High School, St. George's College and Wolmer's Girls School), were in attendance.

The Centre also offered its annual Marine Mania Summer camps over two weeks to children during the summer period (July 14th–25th, 2014). Thirty eight children from ages 5–9 and 10–14 were hosted in successive weeks. Other outreach activities included the Denbigh Agricultural Show (assisted with Mangrove Aquaria in general DLS display, August 4–6, 2013), setting up a display at Caribbean Maritime Institute for Maritime Awareness Week (September 24 & 25, 2013), participation in mangrove survey and restoration workshops held for NGO groups associated with south coast mangrove areas (January 24, 2014) and north coast mangroves (June 14, 2014) and a beach clean-up with JMMB at the Port Royal bathing beach on Labour Day (May 23, 2014).

Numbers of other visitors to the facility during 2013/14 were 4,202, up from 2,074 in 2012/2013. Visitors came from the institutions NEPA, Spanish Town YMCA, El Shaddaih Learning Centre, IOJ Junior Centres, South East Regional Health Authority, CASE, Danny Williams School for the Deaf, KBC Learning Centre, Jamaica 4H Clubs, Homestead Girls Home, UTECH, Mico University and other tertiary and secondary institutions across the island.

Centre for Marine Sciences (CMS) and the Discovery Bay Marine Lab (DBML)

Over the reporting year, Discovery Bay Marine Laboratory hosted 2,946 local and overseas visitors. This was a 24% increase in the visitors compared to last year. The Lab also hosted its annual Eco-Camp on July 7–25, 2014 under the theme “Reef Builders: young minds, fresh ideas”. A total of 94 campers participated in this year’s camp activities. The camp was sponsored by the UWI-Centre for Environmental Management, TPDCo, Hi Lo Foods, CL Environmental, Klimate Refrigeration, Fitzroy’s Wholesale, Blackwood’s Vegetable Farm and Dolphin Cove.

During the 2013–2014 year, DBML had 1,859 man dives. Eleven (9 fishermen, 1 other local and 1 tourist) SCUBA diving accidents were reported and treated in the IHC Hytech recompression chamber. Four staff members (Hugh Small-Port Royal Marine Lab; Camilo Trench, Deana-Lee Douglas and Suzanne Palmer-Department of Life Sciences) were certified as PADI Dive Masters along with the resident USAID Peace Corp/ DBML Outreach officer, Alyssa Smith. Training was conducted by Dr. Dayne Buddo.

The CMS-DBML participated in the annual Research Days activities by mounting an exciting and interactive exhibit on current research projects in the main tent. This year the highlight of the exhibit was the preparation and tasting of the lionfish. Visitors were treated to samples of steamed and escoveitched lionfish prepared by the DBML staff. There was also a demonstration on how to handle and safely remove the venomous spines from this exotic invasive species. The CMS is grateful to the staff of the Port Royal Marine Lab, Life Sciences Department and the over 20 student volunteers who contributed to making the event a success.

A third marine laboratory, the Alligator Head Marine Lab (AHML), was established on March 9, 2014 through a Memorandum of Understanding signed between the University of the West Indies (UWI) and the Thyssen-Bornemisza Art Contemporary (TBA21 Academy). The TBA21, through AHML, plans to pursue a long-term conservation and sustainable development programme by collaborating with the UWI and its other

partners, the Portland Environmental Protection Association (PEPA) and Reef Check Dominican Republic. The research programme is being led by the Research Director, Dr. Dayne Buddo, with support from Dr. Ruben Torres (Reef Check Dominican Republic). The research agenda and Principal Investigators are as follows: Professor Dale Webber-Coastal Water Quality, Dr. Mona Webber-Zooplankton and Ichthyoplankton communities, Dr. Karl Aiken – Fish Sanctuary Establishment/Enhancement, Dr. Ruben Torres – Coral Nurseries and Dr. Dayne Buddo – Lionfish Research and Control; Reef Community Monitoring and Reef Herbivore Research.

RESEARCH OUTPUT

DLS research interests are grouped around Terrestrial, Marine and Freshwater Ecology, Applied Plant Sciences and Animal Sciences. During 2012/13 the research output consisted of 26 referred publications, 22 conference presentations and 3 non-refereed article/technical reports. The crude average, based on 14 academic staff and 4 at Principal Scientific Officer level or above, a total of 18 staff producing in these categories, gives 2.7 publications per staff member when all categories of publications are considered (total = 48). Last year 2012/2013, the average was at 2.2 and the year before 2010/2011, 2.4. Of note, impact factors for the journals indexed range from 0.966 to 4.339.

PAPERS PRESENTED AT CONFERENCES

- **Aiken, K.** (2013) Observations of the sea cucumbers of Jamaica's island shelf. Paper presented at the 66th Meeting of the Gulf and Caribbean Fisheries Institute held November 4–8, 2013 Corpus Christi, Texas, USA. Oral.
- **Aiken, K.** (2014) Fish Sanctuaries in Jamaica – some success stories. Paper presented at the GOJ Annual Fishermen's Week Conference held June 26, 2014, Oracabessa, St. Mary, Jamaica. Oral.
- **Benkeblia, N.** (2013) Climate change and crop productivity in the tropics: How can Jamaica be affected? Paper presented at the Second

Global Conference on Land-Ocean Connections held October 2–4, 2013, Montego Bay, Jamaica. Oral.

- **Benkeblia, N.** (2013) OMICS technologies in the context of developing countries. Paper presented at the CARISCIENCE AGM and Conference held November 14–17, 2013, Runaway Bay, Jamaica. Oral.
- **Benkeblia, N.** (2014). Effects of the concentration of HM and CIP pre-harvest treatment of onion bulbs on the residual levels after harvesting. Paper presented at the 44th Congrès du Groupe Français des Pesticides held May 26–29, 2014, Schoelcher, Martinique, France. Oral.
- **Benkeblia, N.** (2014) Contribution of local under-used fruits in health and nutrition. Paper presented at Research Day, The University of the West Indies held February 19–21, 2014, Kingston, Jamaica. Poster.
- **Boyd, F. and Benkeblia N.** (2014) Larvicidal effect of *Pimenta dioca* extracts on mosquito larvae of *Culex* sp. (Diptera: Culicidae). Paper presented at Research Day, The University of the West Indies held February 19–21, 2014, Kingston, Jamaica. Poster.
- **Brahim, D.** (2013) Metabolomics profiling of mango fruit during maturation and ripening. Paper presented at the CARISCIENCE AGM and Conference held November 14–17, 2013, Runaway Bay, Jamaica. Oral.
- **Bryan, G., McCook, G., and Robinson, D.** (2014) The development of an integrated pest management programme for the coffee berry borer (*Hypothenemus hampei*) in Jamaica. Paper presented at Research Day, The University of the West Indies held February 19–21, 2014, Kingston, Jamaica. Poster.
- **Emanuel, M.** (2014) Physiological and biochemical parameters of maturation ripening and storage of ackee fruit (*Blighia sapida*). Research Day, The University of the West Indies held February 19–21, 2014, Kingston, Jamaica. Poster.
- **Hyslop, E.** (2014) Is the freshwater biodiversity of the Blue and John Crow Mountains' rivers under threat? Paper presented at the One day

Conference on the Blue and John Crow Mountains held February 27, 2014, The University of the West Indies, Mona. Oral.

- **Lindo, A., Robinson, D. and Tennant, P.** (2014) Decoding the genes associated with the quality and flavour of Jamaican cocoa (*Theobroma cacao*). Paper presented at Research Day, The University of the West Indies held February 19–21, 2014, Kingston, Jamaica. Poster.
- **Luke, D.** (2014) The effects of natural disturbance on the forest of the John Crow Mountains. Paper presented at the One day Conference on the Blue and John Crow Mountains held February 27, 2014, The University of the West Indies, Mona. Oral.
- **McLaren, K.** (2013) Forest ecology and impacts of charcoal burning. Paper presented at the International Union for Conservation of Nature (IUCN) Iguana Specialist Group (ISG) held November 14–15, 2013. Kingston, Jamaica. Oral.
- **Robinson, D.** (2014) An overview of UWI, Mona intervention in support of a modern, sustainable cassava industry. Paper presented at the Regional Conference on Cassava in the Caribbean and Latin America held February 10–12, 2014, The University of the West Indies – Cave Hill Campus, Barbados. Oral.
- **Robinson, M., Zachariades, C., Robinson, D., Cohen, J. and Younger, N.** (2013) Field host range of *Melanagromyza eupatoriella* in Jamaica: An insect with potential as a biological control agent on *Chromolaena odorata* in South Africa. In: Zachariades C, Strathie LW, Day MD, Muniappan R (eds). Proceedings of the Eighth International Workshop on Biological Control and Management of *Chromolaena odorata* and other Eupatorieae, Nairobi, Kenya, November 1–2 2010, pp 102–109.
- **Ross-Davis, A., Graça, R., Alfenas, A., Peever, T., Hanna, J., Uchida, J., Hauff, R., Kadooka, C., Kim, M., Cannon, P., Namba, S., Minato, N., Simento, S., Perez, C., Rayamajhi, M., Morán, M., Lodge, D., Arguedas, M., Medel-Ortiz, R., López-Ramírez, M., Tennant, P., Glen, M. and Klopfenstein, N.** (2013) Tracking the distribution of the pandemic *Puccinia psidii* genotypes. Paper presented at the Annual

meeting of the American Phytopathological Association, held August 10–12, Austin, Texas. Oral

- **Stephenson, K.** (2013) Climate change impacts on the Hellshire fauna. Paper presented at the International Union for Conservation of Nature (IUCN) Iguana Specialist Group (ISG) held November 14–15, 2013. Kingston, Jamaica. Oral.
- **Trench, C., Roye, C. and Webber, M.** (2014) Coastal Restoration in Jamaica: 12 Years of Progress. Paper presented at the TropWATER combined Mangrove Conference and Workshop, held February 20–March 2, 2014. James Cook University, Townsville, Australia. Oral
- **van Veen, R.** (2013) Ecology and status of the Jamaican Iguana in the wild. Paper presented at the International Union for Conservation of Nature (IUCN) Iguana Specialist Group (ISG), held November 14–15, 2013. Kingston, Jamaica. Oral
- **Williams, K.** (2014) Fungal degradation of Ackee (*Blighia sapida*) fruit waste for use as a soil amendment. Paper presented at the Twenty-Ninth International Conference on Solid Waste Technology and Management held March 30–April 2, 2014, Philadelphia, PA, U.S. Oral.
- **Wilson, B.** (2013) Seeing the forest for the lizards: Revisiting the ‘Woodley Report’. Paper presented at the International Union for Conservation of Nature (IUCN) Iguana Specialist Group (ISG) held November 14–15, 2013. Kingston, Jamaica. Oral.

Technical Reports

- **Aiken, K.** (2014) Report on investigation of Jamaica's Sea Cucumber Nearshore Resources – Phase 1. GOJ Ministry of Agriculture and Fisheries Workshop on Sea Cucumber Fishery Management, June 13–14, Kingston, Jamaica.
- **Aiken, K.,** Carpenter, R., Charpentier, R., Creary, M., D'Silva, R., Dustan, P., Edmunds, P., Gayle, P. et al. 2014. “Jamaica”. In Status and Trends of Caribbean Coral Reefs: 1970–2012, Jackson JBC,

Donovan MK, Cramer KL and Lam VV (Eds). Global Coral Reef Monitoring Network, IUCN, Gland, Switzerland.

- Grant, T., Pagni, L. and **Wilson, B.** (2013) Jamaican iguana Species Recovery Plan, 2006–2013. IUCN SSC Iguana Specialist Group, Gland, Switzerland. 38 pp.

WORKSHOP PRESENTATIONS/INVITED TALKS

- **Dr. Karl Aiken** represented the three campuses of the UWI at the African, Caribbean and Pacific Group of States Fish (ACP)/Caribbean Regional Fisheries Mechanism (CRFM)/CARICOM Workshop/Meetings in Nassau, Bahamas on October 21–25, 2013. The meeting was attended by numerous delegates from the Pacific, East, Central and West Africa, as well as 12 Caribbean countries. Caribbean projects implemented under ACP Fish II were reviewed.
- **Dr. Karl Aiken** on behalf of the UWI Vice Chancellor's Outreach Programme under the Caribbean and Latin American Cooperation, Regional Headquarters Office, traveled to San Andres island, Colombia, to attend a workshop (November 14–15, 2013) to discuss 'Frontier Integration of the Neighbouring Countries of the Colombian Caribbean'. The two-day meeting was hosted by the National University of Colombia, Caribbean Campus.
- **Dr. Karl Aiken** gave a presentation at the High Seas Alliance/CARICOM Workshop (May 20, 2014) entitled 'High Seas Resources'. The workshop was attended by delegates from 12 countries.
- **Professor Nouredine Benkeblia** visited the Chinese Academy of Agricultural Sciences and the Institute of Vegetables and Flowers on January 7–15, 2014 for discussions relating to potential collaboration on the biotechnology and production of potato and sweet potato. Two presentations were delivered, 'Sweet potato, Agronomy, Agro-processing and Biotechnology' and 'Postharvest Technologies of Sweet potato' to the respective Life Sciences of the Qufu University and the Jiangsu Teacher's University.
- **Professor Nouredine Benkeblia** was an adjudicator at The University

Council of Jamaica (UCJ) review of the programme proposal for the Associate degree in Agricultural Technology at the Montego Bay Community College (March 24–26, 2014).

- **Dr. Dayne Buddo** attended an Advanced SCUBA Training Course in Key Largo, Florida and was successfully certified as a PADI SCUBA Instructor in December, 2013. Financial support was received from the UWI and the Global Environment Facility.
- **Ms. Deana-Lee Douglas**, Scientific officer at Discovery Bay Marine Lab, received Trimble GPS training, as part of the FCF funded Critical Coastal Restoration project.
- **Dr. Eric Garraway** was an adjudicator at The University Council of Jamaica (UCJ) review of the Bachelor of Education, Secondary with specialization in Science Education which is designed to prepare teachers to teach CSEC up to the CAPE level at The Mico University College (March 27 & 28, 2014).
- **Mr. Peter Gayle**, Camilo Trench, Denise Henry, and Deana Lee Douglas (Discovery Bay Marine Laboratory) attended an Advanced GIS training course offered by Mona GeoInformatics (MonaGIS) on October 8–10, 2013.
- **Mr. Kurt Prospere**, PhD Botany, participated (February 17–22, 2014) in the Forest Monitoring course for CARICOM nations in Belem, Brazil. The course was organized by PRODES-INPE (Mapping and Monitoring Deforestation and Forest Degradation in the Brazilian Amazon), introduced TerraAmazon Version 4.4.2, an open-source software that is used for the classification of remotely sensed images in a database environment. Eight other Caribbean territories were represented, namely St. Lucia, St. Kitts, Dominica, Haiti, Suriname, Guyana, Grenada and St. Vincent.
- **Mr. Renaldo Richards**, MPhil Botany, attended the PIP (Pesticide Initiative Programme) Training of Trainers for ACP extension workers from Caribbean countries in St. Lucia, December 2–14, 2013.

- **Professor Ralph Robinson** attended a symposium entitled ‘Caribbean Bioethics and Climate Change’ as a guest of St George’s University, Grenada held November 15–17, 2013. Climate change is possibly the most challenging issue facing the world today. The symposium illustrated how ethical analysis can help us to understand both the nature of the climate problem and constraints on possible solutions, how climate change threatens fundamental values, and how action to address it raises serious concerns of fairness and responsibility. Proceedings of the symposium will be published in bioethicscaribe.org.
- **Professor Ralph Robinson** attended the Third UNESCO Training Workshop for the National Bioethics Committee of Jamaica. Bioethics: Principles and Practices (May 8–10, 2013), Kingston, Jamaica.
- **Professor Ralph Robinson** participated in the Introductory Mission at the University of Guyana (March 2–8, 2014) and conducted a situation analysis of the University’s Science and Technology Curriculum.
- **Ms. Kimberly Stephenson** represented the Jamaican Iguana Recovery Group at the closeout Workshop for the Mitigating the Threats of Invasive Alien Species in the Insular Caribbean (MTIASIC) Regional Project hosted by UNEP and CABI in Trinidad (March 31–April 4, 2014). Professor Wilson and Ms. Stephenson were awarded plaques for their outstanding contributions to the Jamaican Iguana Pilot Project.
- **Mr. Camilo Trench**, Chief Scientific Officer at Discovery Bay Marine Lab, presented on Mangrove Rehabilitation at the Mangrove Survey and Restoration Workshop, BREDS Foundation, St. Elizabeth.
- The Centre for Marine Sciences in August 2013 conducted a water quality and oceanographic assessment of the Pedro Cays as a part of Department of Geography and Geology study of Pedro’s Carrying Capacity for the Ministry of Agriculture & Fisheries. The report was prepared by Patrice Francis from the Centre; Hugh Small and Camilo Trench from Port Royal and Discovery Bay Marine Labs respectively. Dr. Mona Webber; Professor Dale Webber and Rachel

Allen made the public presentation of the document on January 9, 2014 at the Mona Visitors Lodge.

- **Professor Dale Webber** was invited by the Hope United Church Library and Reading circle to make a multimedia presentation entitled “Current issues in Jamaica’s coastal zone management, particularly in relation to the development of the logistics hub”. This was held on Sunday June 22, 2014 on the church grounds.
- **Professor Byron Wilson**, on behalf of UWI, hosted the 2013 meeting of the International Union for Conservation of Nature (IUCN) Iguana Specialist Group (ISG) from November 14–15, 2013. The IUCN is the oldest and largest global environmental organization. Following the 're-discovery' of the Jamaican iguana in 1990, an international workshop on iguana biology and conservation was held in Kingston, in 1993, to conduct a Population and Habitat Viability Analysis (PHVA) and develop a comprehensive plan for recovering the species in the wild. That first gathering of iguana experts in Kingston, in 1993, led to the formation of the IUCN Iguana Specialist Group, so November 2013 represented the 20th anniversaries for both the PHVA and the formation of the IUCN ISG. Since recovery efforts were initiated in the early 1990’s the numbers of nesting females and annual hatchlings have increased six-fold, and over 200 individuals have been collected in the wild, raised at the Hope Zoo, and repatriated back into Hellshire. In conjunction with the ISG meeting, the UWI also co-hosted a 2-day symposium (November 12–13) and workshop devoted to the Jamaican iguana and the Hellshire Hills, held at the Hope Zoo and co-hosted by the Hope Zoo and NEPA. The contributions from this workshop will be published in the journal, *Caribbean Naturalist*.

DEPARTMENTAL PUBLICATIONS

Books

- Benkeblia, N. (2014). *Polysaccharides: Natural Fibers in Food and Nutrition*. CRC Press, Boca Raton (FL), 511 p.

- Coates-Beckford, P. and Tennant, P. (2013) *Plant Disease: The Jamaican Experience*. UWI Press, Kingston, Jamaica, 628 p.

Book Chapters

- Benkeblia, N. (2014) Fructooligosaccharides, diet and cancer prevention: Myths or realities? In: *Polysaccharides: natural fibers in food and nutrition*. N. Benkeblia (Ed). CRC Press, Boca Raton, FL, pp. 385–397.
- Benkeblia, N. (2014) Potato starches: Properties, modifications and nutrition. In: *Polysaccharides: natural fibers in food and nutrition*. N. Benkeblia (Ed). CRC Press, Boca Raton, FL, pp. 105–119.
- Benkeblia, N. (2014) Fructooligosaccharides in *Allium* species: Chemistry and nutrition. In: *Polysaccharides: natural Fibers in food and Nutrition*. N. Benkeblia (Ed). CRC Press, Boca Raton, FL, pp. 75–103.

Refereed Journal articles

- Allen, R. and Webber D. (2013). The Fishers of the Pedro Bank, Jamaica: Through the Lens of their Livelihoods. *Global Journal of Human Social Sciences: B-Geography, Geo-Sciences, Environmental Disaster Management*. 13 (7): 43–53.
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- Benkeblia, N. (2013). Storage technologies of date palm fruits (*Phoenix dactylifera* L.): Current and potential techniques. *Acta Horticulturae* 994: 151–154.
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RESEARCH GRANTS RECEIVED

Prof. Dale Webber

- United States Department of the Interior and Department of State for the Project titled, 'Energy Efficiency & Renewable Energy Cooperation in Jamaica' – US\$197,333.00

Department of Life Sciences

- Inter-American Development Bank for the Project titled, 'Coral Reef Restoration program: Jamaica' – US\$350,000.00

Mr. Peter Gayle

- Noranda Bauxite Jamaica for the Project titled, 'Resurvey of the Noranda Shipping Channel & Berth (Dredge footprint)'- US\$17,600.00
- Noranda Bauxite Jamaica for the Project titled, 'Coral Relocation'- US\$24,209.00
- Noranda Bauxite Jamaica for the Project titled, 'Faunal Survey & Monitoring of Dredging Activity at Noranda Shipping Channel & Berth' – US\$66,414.58

Dr. Mona Webber (with Camilo Trench & Hugh Small)

- National Works Agency for the Palisadoes Shoreline Vegetation Rehabilitation project – J\$50,433,510.00.

Dr. Suzanne Palmer

- Waitt Foundation grant to conduct an assessment of marine ecosystems in the Portland Bight Protected Area – US\$10,000

Professor Byron Wilson

- Disney Worldwide Conservation Fund for the project titled, 'Conservation of the Jamaican Iguana (on-going since 2012)' – US\$25,000
- Dutch Iguana Foundation to support remote monitoring of the iguana conservation zone – US\$3,200

PUBLIC SERVICE

Dr. Karl Aiken

- Board Member & Chair of Fish Sanctuaries, Sub-committee Fisheries Advisory Board of Ministry of Agriculture & Fisheries
- Member, Aquaculture Industry Advisory Board, Ministry of Agriculture, Fisheries.

- Member, Board of Directors of the Caribbean Coastal Area Management Foundation (CCAMF)
- Member, CITES Scientific Authority of Jamaica – NEPA
- Member, Pool of Experts, United Nations World Ocean Assessment Programme 2010–2015.

Prof. Nouredine Benkeblia

- Appointed Editor-in-Chief, *Journal of Food, Nutrition and Dietetics*
- Appointed Editor-in-Chief, *Plant Science Today*
- Appointed Member of the Editorial Board of *American Journal of Food and Nutrition*
- Appointed Member, Editorial Board of *eSCI Journal of Crop Production*.
- Appointed Member, Editorial Board of *International Journal of Agriculture Innovations and Research*
- Appointed Member, Editorial Board of *International Journal of Biochemistry Research & Review*
- Appointed Member, Editorial Board of *International Journal of Food Science, Nutrition and Dietetics*.
- Appointed Member, Editorial Board of *Journal of Agricultural Science and Technology*
- Appointed Member, Editorial Board of *Journal of Environment & Agricultural Studies*
- Appointed Member, Editorial Board of *Journal of Food Chemistry and Nutrition*.
- Appointed Member, Editorial Board of *Journal, Dataset Papers in Agriculture*.
- Appointed Member, Editorial Board of *OnLine Journal of Biological Sciences*.
- Appointed Member, Editorial Board of *Universal Journal of Agricultural Research*

Department of Life Sciences

- Assessor, University Council of Jamaica (UCJ) Examination and Evaluation of the Associate Degree of Science in Agricultural Technology, Montego Bay Community College (MBCC).
- External Examiner, Agricultural Programme, Montego Bay Community College (MBCC).
- Member, International Union of Conservation of Nature, (IUCN), Commission on Ecosystem Management (CEM).

Mr. Frederick Boyd

- External Examiner, Joint Board of Teacher Education (JBTE), Institute of Education, UWI, Mona.
- Member and Institution contact, Society for Economic Botany
- Member, International Association for Plant Taxonomists
- Member, International Society for Horticultural Science
- Member, Department of Life Sciences Liaison for the Nature Preservation Foundation
- Member, Phycological Society of America
- Member, Research & Development and Seed Production Subcommittee, National Organic Agriculture Steering Committee (NOASC), Ministry of Agriculture
- Member, Standards Subcommittee, Jamaica Organic Agricultural Association (JOAM)

Dr. Dayne Buddo

- Chair, Regional Marine Invasive Species Working Group
- Member, National Fish Sanctuaries Committee
- Member, National Invasive Species Working Group
- Member, National Steering Committee for the Regional Invasive Species Project
- Member, Regional Lionfish Committee
- Resource Scientist, Regional Ballast Water Task Force

Dr. Jane Cohen

- CITES Scientific Authority of Jamaica: vice-chair; Jamaican delegate to CITES 16th Conference of the Parties in Bangkok, 3–14 March 2013; member of Advisory Working Group on Evaluation of Significant Trade
- Member, Alien Invasive Species Working Group (NEPA-administered)
- Member, Caribbean Food Crops Society
- Member, Education & Research Sub-Committee (Nature Preservation Foundation) for the Hope Royal Botanic Gardens
- Member, Jamaica Organic Agricultural Association
- Member, Jamaican Society for Agricultural Sciences
- Member, Natural History Society of Jamaica
- Member, Plant Conservation Group, National Environment and Planning Agency (NEPA)

Mrs. Marcia Ford

- Chairperson, National Biodiversity Clearing House Mechanism Steering Committee
- Immediate Past President, Jamaica Institute of Environmental Professionals
- Member, Caribbean Academy of Sciences
- Member, Global Coral Reef Monitoring Network -Caribbean Steering Committee
- Member, International Society for Reef Studies Member
- Member, University Sub Aqua Club
- Secretary, The Jamaica Statistical Society

Mr. Peter Gayle

- Immediate Past President, Association of Marine Laboratories of the Caribbean (AMLC)
- Chairman, AMLC Planning Subcommittee
- Member, Diving sub-group of the working group on Fisheries Management and related matters of the National Council on Oceans and Coastal Zone Management

Dr. Eric Garraway

- Advisor, Vincentian Students Association
- Member, Advisory Board, National History Division, Institute of Jamaica
- Member, Association of Tropical Lepidoptera
- Member, Natural History Society of Jamaica

Dr. Eric Hyslop

- Jamaica Clearing-House Mechanism Steering Committee, Institute of Jamaica
- Member, CXC Subject panel in Biology
- Member, NEPA Endangered Animals Recovery working group

Dr. Dwight Robinson

- Chairman, Jamaica Organic Agricultural Association (JOAM)
- Chairman, National Organic Agriculture Steering Committee , Ministry of Agriculture
- Member, Board of Directors- Greencastle Tropical Study Centre, St. Mary
- Member, National coordinating committee for Agricultural Research and Development, Jamaica

Professor Ralph Robinson

- Board of Directors, Jamaica Agricultural Development Foundation
- Executive Member and Regional Representative, Bioethics Society of the English-Speaking Caribbean
- Justice of the Peace, St. Andrew, Jamaica
- Member, American Society of Parasitologists
- Member, Lay-Magistrates' Association of St Andrew, Jamaica
- Scientific Member, The National Bioethics Committee of Jamaica

Professor Paula Tennant

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

Dr. Kisan Vaidya

- Member, Gene Bank Committee, Jamaica
- Member, Review Committee (Agriculture related articles) of the *Jamaican Journal of Science and Technology*

Professor Dale Webber

- Chair, Diving Sub-Group of the National Council on Ocean and Coastal Zone Management (NCOZCM)
- Chairman, Board of Directors – Environmental Foundation of Jamaica
- Deputy Chairman, National Council on Ocean and Coastal Zone Management (NCOZCM), Ministry of Foreign Affairs and Foreign Trade
- Member, Board of Trustees – Jamaica National Park Trust Fund

Dr. Mona Webber

- External Examiner for University of Technology BSc Degrees in Biological Sciences
- Member, Association of Marine Laboratories of the Caribbean
- Member, Caribbean Academy of Sciences, Jamaica Chapter
- Member, National Fisheries Policy Steering Committee
- Member, CITES (Committee for the International Trade of Endangered Species) Scientific Authority of Jamaica
- Member, National Ramsar committee, NEPA

Professor Byron Wilson

- Invited Member, Crocodile working group (NEPA)
- Invited Member, IUCN SSC Amphibian Specialist Group
- Invited Member, IUCN SSC Boa and Python Specialist Group
- Invited Member, IUCN SSC Iguana Specialist Group
- Invited Member, IUCN SSC Small Mammal Specialist Group
- Invited Member, Working Group on Invasive Species, NEPA

Number of Graduates by majors and class of degree (before Summer School 2013/14)

2013/14	Majors	Minors	Options
Animal Biology	16		
Applied Plant Sciences	1		
Biology with Education			3
Botany	2		
Botany & Zoology	1		
Environmental Biology	20		
Experimental Biology	13		
Horticulture/Tropical Horticulture			7
Marine Biology	29		
Terrestrial and Freshwater Biology	4		
Zoology	6		
Botany		5	
Conservation Biology		10	
Human Biology		11	
Plant Sciences		7	

Numbers / Class of degree

2013/14	First	Upper-2	Lower- 2	Pass
Animal Biology	1	6	9	
Applied Plant Sciences			1	
Biology with Education			3	
Botany				2
Botany & Zoology				1
Environmental Biology		2	15	3
Experimental Biology	1	3	4	5
Horticulture/Tropical Horticulture	1	4	2	
Marine Biology		7	10	12
Terrestrial and Freshwater Biology			4	
Zoology			1	5
Total (102)	3	22	49	28

DEPARTMENTAL PRIZES TO STUDENTS

Young, Shannay	Sasikala Potluri Prize
Parker, Stephanie	Don Skelding Prize
Andrews, Davia	Ivan Goodbody Prize
Boyd, Dana	Devi Prasad Prize
Valentine, Henkel	Vincent Hugh McKie Prize
Myrie, Ameka	Lloyd Coke Prize
Walters, Tiffani	Avinash Potluri Prize
Mc Bean, Asha	Charlotte Goodbody Prize