

DEPARTMENT OF LIFE SCIENCES



Dr. Mona Webber BSc (Hons.) MPhil PhD *UWI*
Head of Department

WORK OF THE DEPARTMENT

The Department of Life Sciences (DLS) continued through 2012/13 to strive for excellence in teaching, research and outreach so as to realise the mission of the University of the West Indies by making available high quality education and training for students in all areas of Biology such that they can contribute positively and become leaders in national, regional and global arenas.

Undergraduate Curriculum:

The Department was able to complete all aspects of the undergraduate curriculum reform with addition of courses designed to help our graduates transition to the world of work or to graduate research. To this end the first batch of 17 students completed the Internship course (BIOL3412) and two new undergraduate projects courses were made available to the final year class of 2012/13. Finalizing students can now do a 3-credit

project or a 6-credit project as part of their degree. All students pursuing a BSc degree in Environmental or Experimental Biology must complete either a project or the internship course in an area related to the major; and students in the Horticulture major must complete both project and internship courses.

Graduate Programmes

The revised MSc in Plant Production and Protection (PPP) and MSc in Marine and Terrestrial Ecosystems (MaTE) will again be offered to students for the 2013/14 academic year. The newly revised MSc PPP was not offered in 2012/13 due to low enrolment. At the request of the students, the MSc MaTE was taught for the first time as a full-time evening programme. This, however, proved too intensive for students, most of whom had full-time jobs and so the programme will revert to the part-time delivery for 2013/14. Ideally, the programme should be delivered in both full-time and part-time formats but additional resources and lecturers would have to be identified.

Student Enrolment

The numbers of students enrolled in Level 1 Life Sciences courses in 2012/13 were maintained at the high levels (590) we have been experiencing over the past four years and as such the Saturday laboratory stream started in 2011/12 was again offered in 2012/13. This, along with repeat evening lectures, facilitated part-time students and as such a consistent number of attendees was maintained.

As expected, the numbers enrolled in Level 2 courses increased significantly in 2012/13 with core courses like Research Skills and Practices in Biology and Principles of Ecology increasing from 150 students in 2011/12 to 207 in 2012/13. This of course necessitated the addition of new lab streams and larger lecture rooms in the Faculty had to be time-tabled. At Level 3 the numbers were slightly higher compared to the previous year with a maximum of 67 in the Human Biology course which was taught for the first time in 2012/13.

Undergraduate Teaching & Student performance:

Lecturer/Course assessments: In the 2012/13 academic year all lecturers and courses in Semesters 1 and 2 received course assessments of > 3.0. However, the percentage of lecturers and courses with ratings ≥ 4.0 indicated values of 62% and 72% for lecturers in Semesters 1 and 2 and 45% and 41% for courses in Semesters 1 and 2. While lecturer ratings are comparable to last year, courses on average received lower ratings from students. At the graduate level all lecturers and courses were rated at ≥ 4.0 by students in both semesters.

Percentage passes: The Level 1 courses maintained good percentage passes in 2012/13 academic year but these were lower than obtained in the previous year. Semester 1 courses (BIOL1017 and BIOL1018) averaged 61 and 80% pass, respectively, while semester 2 courses (BIOL1262 and BIOL1263) averaged 79 and 63%, respectively.

The performance of students at Level 2 was extremely variable. Again the highest percentage pass (95%) was obtained for the course Research Skills and Practices in Biology while the lowest passes were obtained in the Semester 2 Zoology courses Animal Form and Animal Physiology (39 and 52% passes, respectively). This has led us to review these two courses and make significant changes to their content and delivery.

Graduate Research Students

Eight MPhil and two PhD students commenced higher degree programmes in 2012/13. Three students received Graduate Scholarships: Kurt Prospere, PhD, Forestry; Kimani Kitson-Walters, MPhil Marine Biology & Biotechnology; Nasheika Guyah MPhil in Marine Sciences and two students successfully upgraded from an MPhil to the PhD in 2012/13. These were: C. Adit Sharma and Rick van Veen.

Ten graduate students attended and presented at the Association of Marine Laboratories of the Caribbean biennial conference hosted by the Discovery Bay Marine Laboratory, Centre for Marine Sciences in June 2013. This generated ten new oral conference presentations and five

poster presentations from students. Invaluable assistance to facilitate student registration was received from Campus Committee for Graduate Studies and Research.

Three MPhil and three PhD students completed degrees in 2012/13. The degree specialization, names and supervisors of those completing in the reporting period are given below.

MPhil Botany

Beckford, Howard Dr. Kurt McLaren/Dr Jane Cohen

McLymont, Peter Dr. Jane Cohen

PhD Environmental Biology

Grey, Orville Professor Dale Webber

MPhil Marine Sciences

Mitchell, Achsah Dr. Mona Webber/Dr. Dayne Buddo

PhD Marine Sciences

Andrew Ross Dr. Mona Webber

PhD Zoology

Todd, Sacha-Renee Dr. Eric Hyslop

SUMMER SCHOOL

The DLS Summer School was again very efficiently managed by our summer school coordinator, Dr. Tannice Hall. 398 students registered for, and sat 38 courses. Many of the courses were ‘exams-only’ sittings of previously offered courses which were being made available to students who had passed the coursework. 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. The summer semester also facilitated the offering of the Internship and Research Project courses which are difficult to schedule in the normal semesters.

PORT ROYAL MARINE LABORATORY

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 several departments on the campus. The number of users for the period again included weekly visits of 30–50 Marine Ecology, Coral Reef Biology and Fisheries Ecology UWI Mona Campus students. In addition, 48% of Life Sciences courses were provided with specimens for laboratory classes confined to the campus due to size or the need for specialist equipment.

The UWI/EFJ Biodiversity Centre offered “camps” to children (ages 6–18) during both the Easter and summer periods. The Easter holiday trips (April 2–4, 2013) and “Marine Mania” summer camps (July 2013) which were being offered for the first time were hugely successful with maximum spaces taken in all camp groups save in the oldest age category (15–18 years). 180 persons were hosted for the Easter day-trips which targeted primarily UWI Mona Campus staff and their children and 52 campers participated in the set of three, week-long summer camps.

Numbers of other visitors to the facility during 2012/13 were approximately 2074, down from 2,758 in 2011/12. Visitors came from institutions like NEPA, CL Environmental, Natural History Society, Royal Jamaica Yacht Club, Texas A & M Marine Archaeology group, Kings College and University of South Florida and schools like AISK, Ardenne High, Black River High, Buff Bay High, Champion College, Charlie Smith High, Edwin Allen High, Holy Childhood High, Meadowbrook High, Paul Bogle High, St. Joseph’s Infant, Suthermere Prep. and Wilmor Prep. as well as teacher’s colleges and other tertiary institutions.

The Iguana Conservation Project (Disney grant to Professor Byron Wilson) funded 557 students with 59 teachers from 9 schools in the vicinity of the Hellshire Hills and other parts of St Catherine to visit the Biodiversity Centre where two Jamaican iguanas form part of the outdoor display.

**CENTRE FOR MARINE SCIENCES (CMS) DISCOVERY
BAY MARINE LAB (DBML)**

Hyperbaric Chamber Commissioning Ceremony

On March 13, 2013, the Centre for Marine Sciences (CMS) hosted the commissioning ceremony of the IHC Hytech Hyperbaric Chamber at the Discovery Bay Marine Laboratory in St. Ann. The chamber is the only functional unit on the island serving as a focal point for the treatment of scuba diving accidents (tourists, local sports divers and commercial fishermen) on behalf of the emergency health services. Funding for the chamber was made possible through the Office of the Principal and a grant from the Tourism Enhancement Fund (TEF) to the CMS. Principal, Professor Gordon Shirley, brought greetings from the University as well as Minister of State, Ministry of Foreign Affairs and Foreign Trade and Chairman of the National Council on Ocean and Coastal Zone Management, Honourable Arnaldo Brown. The Minister of Tourism, Dr. Wykeham McNeill, gave the keynote message while Dr. Camille Bell-Hutchinson and Mr Clyde Harrison Executive Director of the Tourism Enhancement Fund unveiled a plaque from the TEF.

**Association of Marine Laboratories (AMLC) 36th Scientific Meeting held
June 17–21, 2013**

The AMLC meeting was hosted by the DBML/CMS/DLS and was held at the Sunset Jamaica Grande Hotel in Ocho Rios between June 17 and 21, 2013. The theme was “Managing for sustainability and resilience: challenges for CZM in the Caribbean”.

A total of 60 *Oral Presentations* in 13 sessions were heard over the five days (of which 10 were by UWI staff and students) and 40 posters were mounted (with 5 being from the UWI) making a total of 100 presentations with 15% UWI participation. Six students attended with four (Denise Chin, Achsah Mitchell, Rachel Allen and Andrew Ross) presenting orals. Ten staff attended and presented. A further 12 UWI staff and students will benefit from the scientific meeting as co-authors of the publications

which will be placed in a special edition of the peer reviewed *International Journal for Tropical Biology*. This brings the total UWI personnel to benefit to 27.

The meeting provided an excellent opportunity for Caribbean integration with 123 registered participants (51 students; 51 academic staff; 12 institutional representatives and 9 non-members who attended as speakers and facilitators) from 19 countries representing 41 academic institutions.

The Discovery Bay Marine Laboratory hosted 2,250 visitors (590 from UWI, 1477 local visitors and 188 from overseas). Over the reporting period visitors came from institutions such as Brown's Town Community College, CASE, Columbus Prep School, Duncans All Age, Green Pong High School and Moneague Teachers College. Overseas visitors came from institutions including Bermuda Institute of Ocean science, Hamline University, McMaster University, Stony Brook University and University of Bedfordshire.

During the 2012–13 year, 18 SCUBA diving accidents were reported to DBML of which 15 were treated in the new Chamber. Eleven (11) of those treated (as well as the three not treated) were local Fishermen /divers from the south coast. A Commercial Diver was also treated by DBML. The remaining three cases were Tourists from various north coast hotels.

All cases were dealt with using US Navy Table 6 treatment protocols and were either satisfactorily resolved or demonstrated marked improvement of their symptoms before leaving the Chamber facility.

AGRRA TRAINING – JAMAICA 21–23, JUNE 2013

Following the AMLC Scientific Meeting Dr Judith Lang (Scientific Coordinator for the AGRRA Project – Atlantic and Gulf Rapid Reef Assessment) ran a 2-day workshop at Discovery Bay for reef scientists on the AGRRA method for reef health assessment. The workshop comprised informal lectures, interactive discussions and practice coral and benthic survey dives using the AGRRA method.

Nine of the fourteen participants were from the Department of Life Sciences (DLS), and a number from the University Sub-Aqua Club, providing an excellent opportunity for DLS staff and students to be trained in a powerful regional management tool for tracking reef health.

After a successful workshop we now aim to source funding for further in-country training to increase the number of volunteer divers and to develop a national reef survey using the AGRRA method.

DLS STAFF CHANGES AND RESEARCH ACTIVITY HIGHLIGHTS

Staff Changes

Life Sciences has struggled to maintain the necessary complement of permanent, full-time lecturing staff in the face of losses due to retirement, resignation and secondment. One new full-time staff member was recruited in the 2012/13 academic year in the area of Plant Sciences/Ecology (alleviating somewhat the loss of Professors Coates Beckford and Webber) but there is still urgent need to fill vacancies in the areas of Animal Sciences/Physiology and most recently, Coral Reef Biology.

During 2012/13 academic year, **Dr. Byron Wilson** was promoted to the rank of Professor with his title being Professor of Conservation Biology.

The 2012/13 academic year also saw the resignation of Dr. Judith Mendes, Coral Reef Biologist who has been temporarily replaced by **Dr. Suzanne Palmer** and the appointment of **Dr. Philip Rose** to the post of Lecturer in Plant Sciences.

The department also said farewell to **Mr. Delcovery (Dennis) Worrell** who retired in July after over 40 years of service to the University.

Finally, it was with tremendous sadness that the DLS family bade farewell to Mr. Hugh Earle Lounges, Teaching Assistant for first year Biology, who passed on in January 2013.

Principal's Research Days Awards

Four academic staff members, one graduate student along with other staff in Life Sciences received The Principal's Research Awards for 2013 as follows:

- Award for Best Researcher (shared by): **Professor Nouredine Benkeblia** and **Dr. Kurt McLaren**
- Award for Research Project attracting the greatest funds (J\$21,635,530.): **Professor Dale Webber** and **Mr. Peter Gayle** for Dry Limestone Conservation project – DBML
- Award for Research Project with the Greatest Business/Economic/ Development Impact: **Dr. Mona Webber** and **Mrs Sophia Davis** (PhD Student) along with Mr. Camilo Trench, Mr. Hugh Small and Ms. Sharda Spence for the UWI/EFJ/PRML Biodiversity Centre Project.

Research Output (Publications)

During 2012/13 the research output of the DLS consisted of 11 refereed publications, 28 conference presentations and 1 non-refereed article/ technical report. The crude average, based upon 14 permanent academic staff and 4 at Principal Scientific Officer level or above, a total of 18 staff producing in these categories, gives 2.17 publications per staff member when all categories of publications are considered (total = 39). This is ~40% less than the average of 3.66 publications from 2011/12 but similar to that of the previous year.

Targets

Targets indicated for 2012/13 in the 2011/12 report were:

1. Improvement in the quality of the experience and training for MPhil and PhD students as well as increasing the PhD: MPhil student ratio in the Department.

2. Improved collegiality through the regular hosting of, or participation by staff and students in, seminars/ workshops/ international conferences.
3. Engagement, training and empowering of administrative and technical staff in the Department.

There has been some progress towards the meeting of these targets but there is more work to be done so as to realise measurable and long-lasting success.

There was obvious improvement of the quality and performance of technical staff of which, 66% have BSc degrees in Biology (inclusive of two with PhD degrees and one with an MPhil degree). Our Scientific officers, technicians, gardeners and other ancillary staff must be commended for rising to the challenge of increased numbers of students coupled with significant curriculum changes in the 2012/13 academic year.

LIST OF DEPARTMENTAL PUBLICATIONS

Papers presented

- Ennis, Z. and Aiken, K. (2013) “The spearfishing sub-sector in Jamaica: a large and growing threat.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Benkeblia, N. (2013). Metabolomics and Postharvest Sciences: Challenges and Perspectives. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Benkeblia, N. (2013). Logistic Systems and Management in Jamaica in the Fruit and Vegetable Industry: State, Limitations and Opportunities. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.

- Emanuel, M. and **Benkeblia, N.** (2013). The relationship between Firmness, Skin Colour, Dry matter and Maturity stages of Ackee fruit (*Blighia sapida*). III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Boyd, F.H. and **Benkeblia, N.** (2013). In Vitro Evaluation of Antimicrobial Activity of Crude Extracts of *Pimenta dioica* L (Merr.). III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Diop, B. and **Benkeblia, N.** (2013). Correlation Between Skin Colour, Firmness, Dry Matter and Maturity Mango (*Mangifera indica* c.v. East Indian). III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Richards, R. and **Benkeblia, N.** (2013). Investigation of Some Maturity and Ripening Parameters of West India Cherry (*Malpighia emarginata*.) III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Steen, S. and **Benkeblia, N.** (2013). Variation of Reducing and Total Sugars in Onion (*Allium cepa*) Bulb Tissues During Growing and Bulbing Stages. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago.
- Emanuel, M. and **Benkeblia, N.** (2013). Variation of Total and Reducing Sugars, Total Phenols and Chlorophylls in Sour sop (*Annona muricata*) during “on tree” ripening stages. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago. *Poster*.
- Emanuel, M., Richards, R. and **Benkeblia, N.** (2013). Variation of Total and Reducing Sugars, Total Phenols and Total Anthrocyanins

in Custard apple (*Annona reticulata*) during “on tree” ripening stages. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago. *Poster*.

- Emanuel, M., Diop, B. and **Benkeblia, N.** (2013). Variation of Total and Reducing Sugars, Total Phenols and Chlorophylls in Sweet sop (*Annona aquamosa*) during “on tree” ripening stages. III International Conference on Postharvest and Quality Management of Horticultural Products of Interest for Tropical Regions, July 1–5, Port of Spain, Trinidad and Tobago. *Poster*.
- **Buddo, D.** and Maxam, A. (2013) “The use of biology, oceanography and geographic information systems to manage the release of ballast water in Kingston Harbour, Jamaica.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Reid, N. T. P. and **Cohen, J.** Alternative weed management strategies for vegetables: solarization and mulching in onions. Caribbean Food Crops Society (CFCS) 49th Annual Meeting, 30 June to 6 July, Trinidad; *Oral and abstracts book*.
- Charpentier, B. and **Gayle, P.** (2013) “The role of colony size in the resistance and tolerance of Scleratinian corals to temperature-induced bleaching on Jamaica's north shore reefs.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica. *Poster*.
- **Hyslop, E.** (2012) Research in Freshwater Ecology in Jamaica: an overview of the past 15 years of research. Freshwater Biological Association Annual Conference, University of Glasgow, Scotland. July 10–11, 2012. *Poster*.
- **Robinson R.D.** and **Wilson B.S.** (2012). Wither environmental ethics? Fifty-Fifty: Critical Reflections in a Time of Uncertainty (SALISES), Kingston, Jamaica (August 20–24, 2012).
- Johnson L, **Tennant, P.** 2012. Viruses infecting Sweet Potato in

Jamaica. 16th Triennial Symposium, International Society for Tropical Root Crops. Federal University of Agriculture, Abeokuta, Nigeria, September 23–8, 2012.

- 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-Ramirez M, **Tennant P**, Glen M, Klopfenstein N. 2013. Tracking the distribution of the pandemic *Puccinia psidii* genotypes. Annual meeting of the American Phytopathological Association Austin, Texas, August 10–12.
- Ainsworth, P. and **Webber, D.** (2013) “The determination of the breeding success of the masked booby, *Sula dactylatra-dactylatra* at Middle Cay, Pedro Bank, Jamaica.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Allen, R. and **Webber, D.** (2013) “The fishers of the Pedro Bank, Jamaica: a livelihood analysis.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Grey, O. and **Webber, D.** (2013) “Application of the soil and water assessment tool (SWAT MODEL) on a small tropical island state (Great River Watershed, Jamaica) as a tool in integrated watershed and coastal zone management.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Small, H.; Lue, K.; **Webber, D.** and **Webber, M.** (2013) “The planktonic communities of the Jamaican south eastern coastal shelf; a comparison of harbour, coastal shelf and offshore oceanic bank areas”. Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica.
- Liu, H.; Broomfield, S.; Duncan, A.; Grant, L.; **Webber, D.**; **Webber, M.** (2013) “A survey of phytoplankton and water quality of Kingston Harbour and the north east Hellshire coastline, Jamaica.”

Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica. *Poster*.

- Trench, C.; Small, H.; Morrison, L.; **Webber, D.**; **Webber, M.** (2013) “Rackham’s Cay cut face coral succession study.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica. *Poster*.
- Chin, D.; **Webber, M.**; **Webber, D.** (2013) “Spatial variation of the coral reefs in Foul and Folly Bays, St. Thomas, Jamaica.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013. Ocho Rios, Jamaica.
- Francis, P.; Maxam, S.; **Webber, M.** (2013) “Rapid reassessment of zooplankton communities for the resource management of Kingston Harbour, Jamaica.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013. Ocho Rios, Jamaica. *Poster*.
- Guyah, N.; **Webber, M.**; Persad, G.; Francis, P. (2013) “Are our marine protected areas protecting our juvenile stocks? A three month survey of Ichthyoplankton in Jamaican waters.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013 Ocho Rios, Jamaica. *Poster*.
- Mitchell, A.; **Webber, M.**; **Buddo, D.**; **Webber, D.** (2013) “Sampling and analysis of ballast water in the Jamaican scenario.” Paper presented at the 36th meeting of the Association of Marine Laboratories of the Caribbean held June 17–21, 2013. Ocho Rios, Jamaica.

REFEREED PUBLICATIONS

Books, Book Chapters and Monographs:

- **Benkeblia, N.** (2012). Postharvest diseases and disorders of potato tuber *Solanum tuberosum* L. In: *Potatoes: Production, consumption and health benefits*. Caprara C. (Ed.). Nova Science Publisher Inc., New York, pp. 99–114.

- **Buddo, D.** (2012) Legal and Regulatory Considerations for Lionfish Management. In *Invasive Lionfish: a guide to Control and Management*. Edited by James A. Morris.
- **Tennant P.** and Fuchs M. 2012. Transgenic crops resistant to fungal, bacterial and viral pathogens. In: Meyers RA (ed). *Encyclopedia of Sustainability: Science and Technology*. Springer Science+ Business Media, LLC. pp. 10694–10713.

Journal Articles

- **Aiken, K.** 2012. Managing Jamaica's Conch Industry. Marine Biology article in *Caribxplorer*. 3: 23–26.
- Emanuel, M. A., Gutierrez-Orozco, F., Yahia, E.M. and **Benkeblia, N.** (2013). Assessment and profiling of the fatty acids in two ackee fruit (*Blighia sapida* Koenig) varieties during different ripening stages. *Journal of the Science of Food and Agriculture*, 93: 722–726.
- Emanuel, M.A. and **Benkeblia, N.** (2012). Adding value to tropical fruits – the case of the Jamaican ackee industry: Lessons for policy and practice. Knowledge for Development, Technical Centre for Agricultural and Rural Cooperation (CTA), <http://knowledge.cta.int/Dossiers/S-T-Issues/Innovations-in-tropical-food-processing/Feature-articles/Adding-Value-to-Tropical-Fruits-The-Case-of-the-Jamaican-Ackee-Industry-Lessons-for-Policy-and-Practice>.
- **Buddo, D St. A., R. Steele, MK Webber** (2012). Public health risks posed by the invasive Indo-Pacific green mussel, *Perna viridis* (Linnaeus, 1758) in Kingston Harbour, Jamaica. *Bioinvasions Record* 1:3 171–178.
- Cowie, Robert H., James R. Hollyer, Alexandre J. da Silva, Robert G. Hollingsworth, Marlena C. Dixon, Praphathip Eamsobhana, LeAnne Fox, William L. Gosnell, Kay Howe, Stuart Johnson, Kenton J. Kramer, John F. Lindo, Zhao-Rong Lun, Arnaldo Maldonado, Jr., Alessandra L. Morassutti, Gerald S. Murphy, Sarah Y. Park, Yvonne Qvarnstrom, **Ralph D. Robinson**, Kittisak

Sawanyawisuth, John Teem, Silvana C. Thiengo, Cheridah D. Todd, Hung-Chin Tsai, Gordon D. Wallace, Cecelia A. Waugh, A. Christian Whelen, Patricia P. Wilkins, Ting-Bao Yang (2012). Workshop on research priorities for management and treatment of angiostrongyliasis. Emerging Infectious Diseases [Internet] <http://dx.doi.org/10.3201/eid1812.120499>

- Fisher L, Tennant P, Mc Laughlin W. 2013. Diversity of *Citrus tristeza* virus in Jamaica. *Journal of Plant Pathology* 95: 201–206.
- McLaren, I. and Webber, D. (2013) The use of select writing across the curriculum strategies and their impact on science students' attitude to writing: A comparison of outcomes for two undergraduate Biology courses. *Global Journal of Human Social Science, Linguistics & Education* 13(6): 1–11.
- Parham, J.F., T. J. Papenfuss, P. P. van Dijk, B. S. Wilson, C. Marte, L. R. Schettino, and W. B. Simison. 2013. Genetic introgression and hybridization in Antillean freshwater turtles (Trachemys) revealed by coalescent analyses of mitochondrial and cloned nuclear markers. *Molecular Phylogenetics and Evolution*.

Technical Reports and Non-peer Reviewed Articles

- Ennis, Z. & K.A. Aiken. 2012. “Re-investigation of the spearfishing sub-sector of Jamaica”. Proc. 65th Annual Meeting of the Gulf & Caribbean Fisheries Institute, Puerto Morelos, Cancun, Mexico, Novemeber 2011.

WORKSHOP PRESENTATIONS

- **Dr. Karl Aiken** was invited as a marine fish expert to participated in the Third Caribbean IUCN Fish Red List Workshop, held at the Normandie Hotel, Port of Spain, Trinidad & Tobago, January 28th to February 1st, 2013, where more than 200 species of marine fishes were assessed for their conservation status by a team of 25 experts mainly from the US.

- **Dr. Karl Aiken** was also invited as Resource Person to the Caribbean Regional Fisheries Mechanism (CRFM)/ACP2 Queen Conch Regional Management Workshop, held from 6–8 June, 2013 in Kingstown, St. Vincent & the Grenadines, Eastern Caribbean, with 30 participants from the US & Caribbean.
- **Dr. Karl Aiken** was invited by the Caribbean Coastal Area Management Foundation or CCAMF (managers of Portland Bight Protected Area) to make a multimedia presentation entitled “The Jamaican Fishing Industry: Protecting our Seas for Future Use”, at the 2013 Annual Fishermen’s Conference, on Wednesday 26th June 2013, held at the Farmers’ Training Centre, Twickenham Park, St. Catherine.
- **Professor Dale Webber** presented a paper entitled: “Opportunities and Synergies Available for Building National and Regional Capacities to Conduct Marine Assessments for the Regular Process” to the Workshop For The Wider Caribbean Region (WCR) under the auspices of the United Nations, in support of the UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment, Including Socioeconomic Aspects from 13–15 November 2012 at Sheraton Miami Airport Hotel & Executive Meeting Center Miami, Florida, U.S.A.
- **Professor Dale Webber** gave the annual American Friends of Jamaica/Cobb Family Lecture titled “Funding Environmental Research at the UWI: An Investment in the Future.” On Thursday February 7, 2013.
- **Professor Dale Webber** made a presentation titled “Environmental Issues: Global and Regional Perspectives” to the Annual Judicial Conference of the Organisation of Eastern Caribbean States in St. Lucia, October 18–19, 2013.

INCOME GENERATION

Externally Funded Research Grants:

Dr. Karl Aiken

Ministry of Agriculture & Fisheries, Fisheries Development & Management Fund, for Project titled “Investigation of status of the Industrial Spiny Lobster Fishery on Pedro Bank”, June–December 2013. Value – J\$1.5 Million.

Professor Dale Webber

DBML (CMS) Seagrass Rehabilitation Project: E. Pihl & Son – Value US\$150,000.

DBML (CMS) Coral Habitat Restoration Project: Noranda Jamaica Bauxite Partners – Value US\$167,000.

Public Service

Dr Karl Aiken

- Member, Pool of Experts, United Nations World Ocean Assessment Programme 2010–2015.
- Member of the Board of Directors of the Caribbean Coastal Area Management Foundation (CCAMF).
- Member, CITES Scientific Authority of Jamaica – NEPA.
- Fisheries Advisory Board of Ministry of Agriculture & Fisheries (Board member & Chair of Fish Sanctuaries sub-committee).
- Member, Aquaculture Industry Advisory Board, Ministry of Agriculture, Fisheries.

Professor Nouredine Benkeblia

- Appointed member of the Editorial Board of journal: Dataset Papers in Agriculture.

Department of Life Sciences

- Appointed member of the Editorial Board of *eSCI Journal of Crop Production*.
- Appointed member of the Editorial Board of *International Journal of Food Science, Nutrition and Dietetics*.
- Appointed member of the Editorial Board of *Journal of Food Chemistry and Nutrition*.
- Named a Full Member of the International Union of Conservation of Nature, (IUCN), Commission on Ecosystem Management (CEM).
- Appointed member of the Editorial Board of: *OnLine Journal of Biological Sciences*.

Mr. Frederick Boyd

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

Dr. Dayne Buddo

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

- Member, National Steering Committee for the Regional Invasive Species Project
- Member, National Invasive Species Working Group

Dr Jane Cohen

- Plant Conservation Group, National Environment and Planning Agency (NEPA): member
- Education & Research Sub-Committee (Nature Preservation Foundation) for the Hope Royal Botanic Gardens: member.
- 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, Jamaican Society for Agricultural Sciences
- Member, Caribbean Food Crops Society
- Member, Jamaica Organic Agricultural Association
- Member, Natural History Society of Jamaica

Ms. Marcia Creary

- Chairperson, National Biodiversity Clearing House Mechanism Steering Committee
- Acting Treasurer, University Sub Aqua Club
- Member, FCF Technical Review Committee
- Member, Diving sub-group of the working group on Fisheries Management and related matters of the National Council on Oceans and Coastal Zone Management
- Member, Marine Geology Unit Photo Database Advisory Committee
- Member, International Society for Reef Studies
- Member, Caribbean Academy of Sciences

Mr. Peter Gayle

- President, Association of Marine Laboratories of the Caribbean (AMLC)
- 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

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

Dr. Eric Hyslop

- Member, CXC Subject panel in Biology
- Jamaica Clearing-House Mechanism Steering Committee, Institute of Jamaica

Dr. Judith Mendes

- Member, Education Sub-Committee, International Society for Reef Studies; appointed while attending the “prestigious International Coral Reef Symposium (ICRS) in Australia” July 2012

Dr. Kurt McLaren

- Member of the Board – Forestry Department

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
- Member, American Society of Parasitologists
- Scientific Member, The National Bioethics Committee of Jamaica
- Justice of the Peace, St. Andrew, Jamaica
- Member, Lay-Magistrates' Association of St. Andrew, Jamaica

Professor Paula Tennant

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

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

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

Dr. Mona Webber

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

Dr. Byron Wilson

- Invited Member, IUCN SSC Iguana Specialist Group (1998 to present)
- Invited Member, IUCN SSC Amphibian Specialist Group (2009 to present)
- Invited Member, IUCN SSC Boa and Python Specialist Group (2011 to present)
- Invited Member, IUCN SSC Small Mammal Specialist Group (2012)
- Invited Member, Working Group on Invasive Species, NEPA (2008 to present)
- Invited Member, Crocodile working group (NEPA) (2011 to present)

Number of Graduates by majors and class of degree (before Summer School 2012/13)

2012/13 Majors	Majors	Minors	Option
Applied Plant Sciences	5		
Animal Biology	15		
Experimental Biology	9		
Environmental Biology	17		
Horticulture/Tropical Horticulture	5		4
Marine Biology	24		
Terrestrial and Freshwater Biology	6		
Minor in Human Biology		10	
Minor in Conservation Biology		6	
Minor in Plant Sciences		5	
Biology with Education			5

Numbers / Class of degree

2012/13 Majors	First	Upper-2	Lower- 2	Pass
Applied Plant Sciences		2	2	1
Animal Biology	1	5	8	1
Experimental	1	1	5	2
Environmental		1	11	5
Horticulture/Tropical Horticulture		5	2	2
Marine Biology		5	7	12
Terrestrial and Freshwater Biology		1	3	2
Biology with Education			4	1
Total (89)	2	20	42	25

DEPARTMENTAL PRIZES TO STUDENTS (N = 8):

Randy Ramor Aird	Sasikala Potluri Prize
Kadavy Geneva Campbell	Don Skelding Prize
Dexter-Dean Colquhoun	Ivan Goodbody Prize
Zoe Aisha Rochelle Gordon	Devi Prasad Prize
Andre Dominic McGregor	Vincent Hugh McKie Prize
Sushania Renee Pryce	L. B. Coke Prize
Ronelle Deandra Robinson	Avinash Potluri Prize
Sharryl Shervaylle Spence	Charlotte Goodbody Prize