

DEPARTMENT OF LIFE SCIENCES

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

WORK OF THE DEPARTMENT

The Department of Life Sciences (DLS) undertook several projects in the 2010/11 academic year and was able to record a number of significant achievements.

Undergraduate Curriculum Reform

One of the Department's primary undertakings in the 2010/11 academic year was to continue the reform of the undergraduate curriculum, a directive of the 2006 Quality Assurance review, which had begun previously with changes to the Level 1 courses in 2008/09. During the 2010/11 academic year through the work of our Curriculum Committee, the DLS rolled out a new curriculum comprised of four Majors, three Minors and two BSc Programmes.



The Department of Life Sciences now offers a new **BSc in Environmental Biology** along with the revised **BSc in Tropical Horticulture**. The four majors are: Animal Biology, Applied Plant Sciences, Marine Biology and Terrestrial and Freshwater Ecosystems. Minors in Human Biology, Conservation Biology and Plant Sciences complete the package. This new curriculum design was contemporaneous with the Level 2 reform and thus ten new and revised Level 2 courses were “put on the books” during the year; completely replacing our previous Level 2 package of courses. The Department's goal is to complete the reform of the undergraduate curriculum by the end of the 2011/12 academic year with complete revision of Level 3 courses. This is required to achieve the new majors/minors and BSc programmes.

Revision of Graduate Programmes

Through the work of the Department of Life Sciences' Graduate committee (chaired by Dr Dwight Robinson) the Department was able to review our two MSc programmes: MSc in Plant Production and Protection (PPP) and MSc in Marine and Terrestrial Ecosystems (MaTE). These were extensively revised in 2010/11 and made available to a new cohort of students at the start of the 2011/12 Academic year. The MSc MaTE is now one of the specializations under the Natural Resource Management umbrella, with the Department sharing core courses with the NRM but having sole responsibility for the students and courses in the MaTE specialization.

During 2010/11 the Department, through the efforts of Professor Ralph Robinson, developed a course in **Research Ethics** (ETHI6010) which saw 11 MPhil and PhD students from several departments in the Faculty participating. The course is UGC funded and was delivered in Semester 2 of the academic year by Dr. Anthony Mullings and Professor Ralph Robinson.

Plans for the implementation of a new Faculty programme, **MSc in Agricultural Entrepreneurship**, housed in the Department of Life Sciences, came to fruition with the programme taking in its first cohort of 11 students in September 2010.

Student Enrolment

The numbers of students enrolled in Level 1 Life Sciences courses in 2010/11 were again high (490-534 across the four courses, cf. maximum of 554 in 2009/10). There was the usual high level of attrition moving from Level 1, with Level 2 courses each having 107-166 students, across the 8 courses. Level 3 numbers ranged from 30 to 66 (across 20 courses) and this created space issues for several final year courses which were previously capped at 40. Consequently, one of the Biology Seminar rooms was expanded to increase lecture capacity. The number of laboratory streams per week in five final year courses was increased to accommodate the final year numbers.

Undergraduate Teaching

The Department maintained its high standard of teaching with 72% of lecturers in Semester 1 and 76% in Semester 2 scoring 4.0 and all lecturers in both semesters scoring 3.0 and above in student assessments. At the graduate level all lecturers were rated at 4.0 by students in courses taught in both semesters. The Faculty of Pure and Applied Sciences at its Awards ceremony in March, 2011 again recognised Professor Dale Webber for “outstanding achievement in teaching” as one of the lecturers with the highest average lecturer assessment scores in the Faculty. Other Life Sciences staff members recognised by the Faculty for high assessment scores were Drs Dwight Robinson and Mona Webber.

The Level 1 courses saw improvements in the percentage passes and class averages in the 2010/11 academic year with maxima of 64% and 81% passes in the Cell Biology and Plant Diversity courses, respectively; cf. 52 to 65% passes in previous year. During the year, the Department implemented compulsory tutorial attendance with graded tutorial exercises (in addition to the usual compulsory laboratory attendance and graded exercises), which contributed to coursework grades for the Level 1 students. Level 1 lecturers, Teaching Assistants and Demonstrators were “hard pressed” to complete the marking of the exercises for such large numbers of students in the requisite time. We continue to review and refine this process.

The poor performance of students at Level 2 was again a feature of the 2010/11 academic year. It has been observed that many of these students recover and do well at Level 3 but failure in Level 2 advanced courses, in many cases, does irreparable damage to the class of degree. In the 2010/11 academic year percentage passes ranged from 24% – 65% in Level 2 courses. The Department is therefore seeking to address the high failure rate at Level 2 of the programme through curriculum reform and measures similar to those implemented at Level 1.

Postgraduate research

The number of students entering new MPhil/PhD programmes was again low with two MPhil and two PhD students commencing higher degree programmes in 2010/11 out of a total of 36 applicants. Mr Setu Munroe successfully upgraded to a PhD during the academic year and one PhD candidate (Mrs Margelette Ellis-Tabanor) was awarded her doctorate. The categories of graduate students completing in the 2010/11 academic year, with supervisors, are given below.

MPhil Marine Sciences

Nicole Harris-Robinson	Supervised by Dr. Mona Webber
Denise Chin	Co-Supervised by Drs. Mona Webber and Judith Mendes

MPhil Zoology

Renaldo Douglas	Supervised by Dr. Eric Hyslop
Monique Curtis	Supervised by Dr. Eric Hyslop

PhD Zoology

Margelette Ellis-Tabanor	Co-Supervised by Drs. Eric Hyslop and Dwight Robinson
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Summer School

In 2010/11 the DLS saw for the first time since 2003, our summer school teaching commencing in June and being completed in July. This signified the end of the Ministry of Education Youth and Culture (MOEYC) project which offered High School teachers the opportunity to do first and second year Biology courses in the summer towards obtaining a degree, but which necessitated starting summer school in July. A total of 28 courses were offered in Summer School to 367 students, with many as exams-only sittings. This is up from 19 courses and 315 students in the previous year. Summer School thus continues to be an important source

of income generation for the Department while providing opportunity for academic recovery for students.

Infrastructure and equipment

The maintenance of the infrastructure of the Department of Life Sciences continues to be a challenge and this was exacerbated by the need to expand to accommodate increased numbers of advanced students in 2010/11. Seminar Room 6 was increased from a capacity of 35 to 55 and the undergraduate computer laboratory increased to seat 40 students (up from 20). Projects are on-going to increase the Molecular Biology/Virology laboratory to seat 60, up from 20 students. The expansion has necessitated the purchase of additional laminar flow hoods, autoclaves, microscopes and other equipment to support the increasing number of students choosing Molecular Biology, Virology, Immunology and Parasitology courses. This as we seek to ensure that all students have access to acceptable standards of basic equipment required for effective teaching and learning.

Port Royal Marine Laboratory

The UWI/EFJ Biodiversity Centre based at the Port Royal Marine Laboratory continued to host large numbers of staff and students from a range of prep/primary, secondary and tertiary institutions across Jamaica. The centre hosted over 2,500 school-based visitors from over 40 schools for Biodiversity Centre and Mangrove tours into the Port Royal mangroves. The Laboratory hosted several First Year Experience (FYE) groups from the Mona campus and facilitated courses in Oceanography, Marine Benthic Communities, Coral Reef Biology, Fisheries and Aquaculture Technologies. The FCF funded coastal plants nursery at the Port Royal Marine Laboratory continued to provide seedlings to NGO and community based groups for coastal re-vegetation projects. The nursery completed a contract (worth ~ J\$500,000.) to re-vegetate the American Airlines crash site using 766 sand dune plants produced at the nursery.

On April 28, 2011 a Bermudian delegation visited the Port Royal Marine Laboratory as part of their UWI Mona Campus tour to explore placement of students; Bermuda having joined the UWI. The delegation consisting

of: Dame Jennifer Smith (former Premier and present Minister of Education - MOE), Mr. Warren Jones - Permanent secretary in the MOE, Ms. Kimberley McKeown- Policy Analyst in the MOE, Dr. Duranda Greene Principal of the Bermuda Community College, were hosted at the Port Royal Marine Laboratory and the Biodiversity centre.

Discovery Bay Marine Laboratory

In the 2010-11 academic year, the Discovery Bay Marine Laboratory (DBML) staff continued the thrust to improve the facility, the services offered and the scientific capability and output. The DBML has become the lead agency for dealing with Marine Invasive Species problems in Jamaica with the Lionfish Project led by Dr. Dayne Buddo, being the flagship of that research. Mr. Peter Gayle represented the UWI at the 35th meeting of the Association of Marine Laboratories of the Caribbean in Costa Rica which facilitated the confirmation of DBML as the site for the 36th scientific meeting of the Association of Marine Laboratories of the Caribbean in 2013.

Over the reporting year, DBML hosted nineteen schools and over 1000 school and college-based visitors. There was a 19.64% increase in visitors in the current year compared to last year. The course Diving Technology for Aquatic Scientists returned to DBML after several years absence with teaching during the second week of the course being provided by the DBML staff. Overseas visitors declined by 16% but five peer reviewed publications were reported by visiting scientists in 2010/11 based on research at the DBML. More than seventy youngsters benefited from our summer Eco-camp and their legacy of a mural with an environmental theme will enrich the learning experience of other visitors throughout the coming year.

The year saw the arrival of the eagerly awaited buoyed, *Integrated Coral Observing Network* (ICON) station, with its increased capacity to monitor tides, waves, currents and other parameters important to properly defining climate change factors. Final installation of this unit and uploading of data to the local CMS Data Archives as well as the regional NOAA-CREWS network of stations and data-set is expected before the end of 2011.

Over the year August 2010 to July 2011 there was a total of 1799 man dives carried out at the DBML. This represented an increase of 25% over the previous year's numbers. Seven SCUBA diving accidents were reported to DBML this year. Five were (successfully) treated in our Hyperbaric (Recompression) Chamber. The CMS was also successful in securing J\$12M from the Tourism Enhancement Fund to augment the UWI resources allowing us to place an order for a new multi-place Hyperbaric Chamber to replace the present 36year old DBML unit. To this end, much of our training activities were geared towards the certification of an operational team for this unit which is expected by December 2011.

Staff developments and Research activity highlights

The 2010/11 academic year saw two members of academic staff (Drs Karl Aiken and Eric Hyslop) embarking on sabbatical leave, while we welcomed back Professor Phyllis Coates-Beckford and Dr Byron Wilson from sabbatical.

The DLS was proud to have six staff members receiving awards at the Principal's research Day awards ceremony in January 2011. These were as follows:

- **Professor N. Benkeblia** - Most outstanding researcher.
- **Drs Eric Garraway and Dwight Robinson** - Most outstanding research activity (along with Dr Trevor Yee and Chara Watson from Natural Products Institute) and Nemoi Chisholm also from Life Sciences.
- **Drs Byron Wilson and Kurt McLaren** - Research project attracting the most research funds
- **Dr. Mona Webber** - Project with the greatest business/economic/development impact.

Dr. Nureddine Benkeblia was promoted to the rank of Professor during the 2010/11 academic year and **Professor Dale Webber** was appointed to the James S. Moss Solomon Sr. Chair in Environmental Management. Professor Webber is therefore on secondment for three years as Director of the Environmental Management Unit at the Mona Campus and

continues as Director of the Centre for Marine Sciences, Department of Life Sciences, Mona Campus.

Research Output

In 2010-2011 the research output of the department consisted of 25 referred publications, 17 conference presentations and 6 non-refereed articles/technical reports. The crude average, based upon 16 academic staff at Mona and 4 at Principal Scientific Officer level or above, a total of 20 staff, gives 2.4 publications per staff member when all categories of publications are considered (total = 48). This is a little higher than the 1.85 recorded in 2009/10 and the research output in terms of refereed journal papers of 1.15 in 2009/10 has also shown a slight increase to 1.3 in 2010/11. The number of conference presentations increased significantly over the previous year (from 8 in 2009/10 to 17 in 2010/11).

Outreach Activities

In addition to participation in visits to High Schools and Career expos to promote the programmes available at the University, the Department participated in, and showcased its research at a number of important expositions and fairs in 2010/11. The Department of Life Sciences (DLS) was a significant contributor to UWI Tent display at the August 2010 Denbigh Agricultural show. The Department presented agriculture and fisheries related research from projects on-campus as well as from the two marine laboratories, thus occupying 9 of the 22 booths in the UWI display. DLS/CMS and the Marine labs contributed to the UWI Green Expo display which won the award for most attractive display in the NGO category. The DLS, through the Port Royal Marine Laboratory participated in the UDC environmental fair held at Two Sisters' Cave, Hellshire October 7, 2010, World Wetlands Day, February 2, 2011 and the EFJ Earth Day celebrations held at Devon House on April 16, 2011.

Achievement of Targets

The following targets were set at the start of the 2010/11 academic year:

- To conduct the complete reform of the entire advanced programme in the DLS.

- To review and revise the existing MSc Graduate programmes so as to improve teaching and learning as well as income generation.
- To improve the quality of the infrastructure and increase space in the DLS for the delivery of quality teaching and research.
- To increase the quantity and quality of staff publications.
- To continue to conduct research of national importance and ensure that the general populace is made aware of its significance by engaging in outreach activities.

This report has indicated that these have been achieved, or partially achieved. The business of curriculum reform of the advanced programme is half way to completion, the taught graduate programmes have been reviewed and many infrastructural improvements have been undertaken or initiated.

The targets for 2011/12 therefore are:

- To complete the reform of the Undergraduate curriculum with Level 3 courses being reviewed.
- Review the MPhil and PhD graduate programmes so as to improve the quality of the experience for students and through-put.
- To revive the annual staff review process with emphasis on the goal setting sections, and focus on specific goals in the areas of research (especially in areas of national relevance), publications and grant acquisition.
- To improve collegiality through facilitating visiting colleagues from other universities and increasing the numbers of seminars, workshops and research presentations held in, or facilitated by the Department

PAPERS PRESENTED

- Meggs, L. Steele, R.D. **Aiken, K. A.** 2010. “Settlement patterns of Caribbean spiny lobster (*Panulirus argus*) in Jamaican waters and observation of growth in captivity.” 63rd Annual meeting of Gulf and Caribbean Fisheries Institute in San Juan, Puerto Rico.
- **Gayle, P.** Charpentier, B. Spence, O. 2011. “Assessing the health status of a coastal habitat: Priorities for impact mitigation and ecosystem restoration.” 35th Annual AMLC Scientific Meeting, Costa Rica.
- Baker K, Smith V, Waugh C, Lopez V, Eyle S, Condappa K, Johnson J, Lindo J, and **Robinson RD.** (2010). “A survey of the parasitic fauna, and feline leukemia (FeLV) and immunodeficiency viruses (FIV) in ten feral cats in Jamaica.” Caribbean Veterinary Medical Association 16th Meeting, November 3-6, 2010, Ocho Rios, Jamaica.
- **Robinson RD** (2010). “Rat Lungworm: an emerging infection in Jamaica.” Caribbean Veterinary Medical Association 16th Meeting, November 3-6, 2010, Ocho Rios, Jamaica.
- **Robinson RD** and **Wilson BS** (2011): ‘Protection of the environment, the biosphere, and Biodiversity’ (*Article 17: UDBHR, 2005*). 2nd UNESCO training for the National Bioethics Committee of Jamaica “*Bioethics: Principles and Practices*”. April 4-9, 2011. Ocho Rios, Jamaica.
- **Webber, D.F.** “Advanced Materials for Improving Environmental Sustainability (MDG 7).” Advanced Materials: Helping to achieve Millennium Development Goals August 15-19, 2010, Ocho Rios, Jamaica.
- **Webber, D.F.** 2010. “The role of the UWI in a Caribbean at environments crossroads”. World Association Sustainable Development 8th International Conference November 22-25, 2010. St. Lucia. Towards Epistemic Sovereignty: (Re)-thinking Development in a Changing Global Political Economy.

- **Webber, D.F.** 2011. “Coastal and Marine Ecosystems: Research possibilities, knowledge gaps and relevance in research”. Eucarinet/Enlace Thematic conference for the EU Framework 7. April 2011. Santo Domingo, Dominican Republic.

Papers presented at 28th International Horticultural Congress, 22-27 August, Lisbon, Portugal.

- **Benkeblia, N.** 2010. “Role of horticulture in agriculture development and food security in Jamaica.” (Oral)
- Emanuel, M. A. and **Benkeblia, N.** (2010). “Variation of color, reducing and total sugars, total Phenolics and chlorophylls in carambola (*Averrhoa carambola*) during five “on tree” ripening stages.” (Poster).
- **Benkeblia, N.** (2010). “Accumulation of total and reducing sugars in the green leaves and bulb tissues during growing and bulbing of onion (*Allium cepa* L.).” (Poster).
- Emanuel, M. A., **Robinson, D.** and **Benkeblia, N.** (2010). “Biodiversity comparison of conventional and fair trade banana farming agricultural systems in Dominica.” (Poster).

Papers presented at 1st International Symposium on Tropical Horticulture, 22-26 November, Kingston, Jamaica.

- Steen, S, **Cohen, J. E.** and **Benkeblia, N.** (2010). “Effects of the plant growth regulator “Stimulate” on the reproductive characteristics of tomato cultivated in greenhouse and open field in the tropics.” (Oral).
- Emanuel, M. A. and **Benkeblia, N.** (2010). “Processing of ackee fruit (*Bhligia sapida* L.): Present and future perspectives.” (Oral).
- **Boyd, F. A. H.** and **Benkeblia, N.** (2010). “A Description of the floral biology operative within *Pimenta dioica* (L.) Merr.” (Poster).

- Emanuel, M. A. and **Benkeblia, N.** (2010). “Variation of reducing and total sugars, total phenolics content and chlorophylls in June Plum (*Spondias dulcis*) during “on tree” ripening.” (Poster).
- Emanuel, M. A. and **Benkeblia, N.** (2010). “Variation of color, total and reducing sugars in “cheese” and “butta” ackee (*Blighia sapida*) varieties during five “on tree” ripening stages.” (Poster).
- **Boyd, F. A.H.** 2010. “Investigation of the antibacterial potential of selected plants on a Gram Positive bacterium.”
- McLymont, P. and **Cohen, J.** 2010. “Flowering and fruit characteristics of Jamaican pomegranate (*Punica granatum* L.) and its vegetative propagation.”

PUBLICATIONS

Books and Monographs

- * **Benkeblia, N.** 2011. Proceedings of the First International Symposium on Tropical Horticulture. *Acta Horticulturae* 894. ISHS, Leuven, 272 p.
- * Lazar, E. E. and **Benkeblia, N.** (Editors). 2010. “Environmentally friendly alternatives for maintaining postharvest quality or controlling decay.” *Stewart Postharvest Review*, Issue 3(4).
- * Nakamura, T., Okazaki, K., **Benkeblia, N.**, Wasaki, J., Watanabe, T., Matsura, H., Uchimiya, H., Komatsu, S. and Shinano, T. 2010. “Metabolomics Approach in Soybean. In: Genetics, Genomics, and Breeding of Soybean.” Bilyeu K, Ratnaparkhe M. B and Kole C (Eds.). CRC Press, Boca Raton, FL, pp. 313-330.
- * **Creary, M. C.** 2010. “Food from the Sea” In McIntosh, C. (Ed.) Agriculture, Food and Health Challenges: Critical issues, perspectives and options. IICA, CTA- Port of Spain: IICA, 2010. 134 p. ISBN13:978-92-9248-161-2

- * Lindo J.F., Waugh C., Todd C., Brown P., and **Robinson R.D.** 2010. “The emergence of *Angiostrongylus cantonensis* as a cause of eosinophilic meningitis in Jamaica: Progress and pitfalls.” *In: Angiostrongylus and angiostrongyliasis – Advances in the disease, control, diagnosis, and molecular genetics.* P. Eamsobhana (ed.) pp. 27-31. Wattanakij Panich Press, Bangkok.
- * Oliver J.E., **Tennant P.F.** and Fuchs M. 2011. “Virus-resistant transgenic horticultural crops: Safety issues and lessons from risk assessment studies.” *In: Transgenic horticultural crops: Challenges and opportunities - Essays by experts,* Mou B and Scorza R (Eds). CRC Press, Taylor and Francis Group, Boca Raton, FL. pp 264-288.
- * **Wilson, B.S.** 2011. “Conservation of Jamaican amphibians and reptiles.” Pages 273-310 *In* A. Hailey, B. S. Wilson, and J. A. Horrocks (eds.), Conservation of Caribbean Island herpetofaunas. Brill, Leiden.
- * Hailey, A., **B. S. Wilson,** and J.A. Horrocks (eds.). 2011. Conservation of Caribbean Island herpetofaunas. Volume 1: Conservation biology and the Wider Caribbean. Brill, Leiden.
- * Hailey, A., **B. S. Wilson,** and J.A. Horrocks (eds.). 2011. Conservation of Caribbean Island herpetofaunas. Volume 2: regional accounts of the West Indies. Brill, Leiden.

Refereed Research and Review Articles

- * Smikle, S.G., Christensen, V. and **Aiken, K.** 2011. “A review of Caribbean ecosystems and fishery resources using ECOPATH models.” *Études Caribéennes* 15: 1-14.
- * **Benkeblia, N.** and Shiomi, N. 2010. “Variation of fructooligosaccharide contents, invertase, 1-KHE, 1-SST, 1-FFT and 6G-FFT activities in green asparagus spears stored at 10 °C.” *Acta Horticulturae* 877: 1309-1316.

- * **Benkeblia, N.** 2010. "Determination of respiratory parameters of onion bulbs (*Allium cepa* L.) under total anoxia." *Acta Horticulturae* 876: 351-354.
- * **Boyd, F. A. H.** and **Benkeblia, N.** 2011. "A Description of the floral biology operative within *Pimenta dioica* L. (Merr)." *Acta Horticulturae* 894: 83-88.
- * **Rose, P.** and **Benkeblia, N.** 2011. "Plants of horticultural importance in Jamaica and the Caribbean region: Botany and distribution." *Acta Horticulturae* 894: 57-64.
- * **Steen, S;** **Benkeblia, N** and **Cohen, J.** 2010. "Effects of the plant growth regulator, Stimulate™, on some postharvest qualities of tomato grown in greenhouses in Jamaica." *Acta Horticulturae* 877: 275-278.
- * **Ishiguro Y., Ueno K., Onodera S., Benkeblia N.** and **Shiomi S.** 2011. "Effect of temperatures on inulobiose and inulooligosaccharides in burdock roots during storage." *Journal of Food Composition and Analysis* 24: 398-401 (IF: 2.423)
- * **Lazar, E.E., Jobling, J.J.** and **Benkeblia, N.** 2010. "Postharvest disease management of horticultural produce using essential oils: today's prospects." *Stewart Postharvest Review* 3: 15-24. doi: 10.2212/spr.2010.3.15.
- * **Fermin, G.** and **Tennant, P.** 2011. "Opportunities and constraints to biotechnological applications in the Caribbean: transgenic papayas in Jamaica and Venezuela." *Plant Cell Reports* 30: 681-687.
- * **Fisher, L. Bennett, S. Tennant, P.** **McLaughlin, W.** 2011. "Detection of Citrus tristeza virus and citrus viroid species in Jamaica." *Acta Horticulturae* 894: 117-122.
- * **Rose, P. E., Webber, D.F.** **Commock, T.** 2010. "The use of open source technologies in developing botanical databases." *Acta Horticulturae* 894: 153-159.

- * Trench, C. and **Webber, M.K.** 2011. “Nursery Propagation of Jamaican Coastal Forest Species.” *Acta Horticulturae* 894:185-190
- * Bennett, C.E., **Wilson, B.S.**, and R. DeSalle. 2011. “DNA barcoding of an invasive mammal species, the small Indian mongoose (*Herpestes javanicus*; E. Geoffroy Saint-Hillaire 1818) in the Caribbean and Hawaiian islands.” *Mitochondrial DNA* 22:12-18.
- * **McLaren, K.**, Levesque, M., Sharma, A., **Wilson, B.**, and M. McDonald. 2011. “From seedlings to trees: using ontogenetic models of growth and survivorship to assess long-term (>100 years) dynamics of a neotropical dry forest.” *Forest Ecology and Management* 262:916-930.
- * Newman, M.E., **K.P. McLaren** and **B.S. Wilson**. 2011. “Comparing the effects of classification techniques on landscape level assessments; pixel-based versus object-based classification.” *International Journal of Remote Sensing* 32: 4055-4073.

Technical reports and Non-refereed Articles

- * Passerley, D.; **Aiken, K.** and Perry, Giselle-Ann. 2011. Characterization of the Jamaican Spearfishing Sector. Proceedings of the Gulf and Caribbean Fishery Institute 62: 235-240.
- * **Buddo, D.** 2010. “Expansion, consolidation and strengthening of marine protected areas network in the organization of eastern Caribbean states” - Report to TNC. 172 pp.
- * **Creary, M.** 2011. Coral Reef Monitoring for the Organization of Eastern Caribbean States and Tobago: Status of the Coral Reefs of Tobago 2009-2010. Mainstreaming Adaptation to Climate Change (MACC) Project. CCCCC, Belize. 23pp
- * **Gayle, P.** 2010. ‘Marine resource enhancements’ – Report to IICA/IJAP/CMS 222 pp.

- * **Gayle, P.** Greenaway, T, Small, H. 2011. “A Rapid Environmental Assessment of Discovery Bay, Jamaica” – Report to Noranda Jamaica Bauxite Partners. 69 pp.
- * **Tennant P, Fisher L, McLaughlin W** (2010) “Disease-resistant transgenic crops: priorities and strategies for the Caribbean.” <http://knowlw-edge.cta.int/en/Dossiers/S-T-Issues-in-Perspective/Biotechnology/Articles/Disease-resistant-transgenic-crops-priorities-and-strategies-for-the-Caribbean>.

INCOME GENERATION

Dr. Karl Aiken

J\$1,000,000 from the Fisheries Management & Development Fund - 22 November 2010, for undertaking a follow-up study on the spearfishing industry of Jamaica.

Dr. Mona Webber

Environmental Foundation of Jamaica – **J\$5,471,550.** with Co- PI **Mr Hugh Small:** Baseline surveys of vulnerable and impacted mangrove forest areas around Jamaica with emphasis on areas associated with fish sanctuaries.

UWI-Mona Campus Research Fellowship grant – **J\$3,900,000.** with **Dr Gale Persad:** A comprehensive survey of ichthyoplankton in Jamaican waters: Are our Marine Protected Areas (MPAs) protecting our juvenile stocks?

UWI-Mona Campus Research & Publications grant – **US\$5,235** for the project. A comprehensive survey of ichthyoplankton in areas designated as fish sanctuaries.

Dr. Byron Wilson (J\$4,802,500.)

Mohamed bin Zayed Conservation Fund (**US\$4,000;** Co-PI with I. Holmes); Conservation of Jamaican amphibians.

Miami Metro Zoo (**US\$5,000**; Co-PI with I. Holmes); Conservation of Jamaican amphibians.

Anonymous Foundation (**US\$45,000**; through the International Iguana Foundation, with Co-PI R. Hudson): Conservation of the Jamaican Iguana.

Fort Worth Zoo (**US\$2,500**; Co-PI with I. Holmes): Conservation of Jamaican amphibians.

The **International Coral Observatory network (ICON) station** was 80% funded by the Caribbean Community Centre for Climate Change (CCCC/5Cs) who provided **US\$110,000** for its purchase and installation at the Discovery Bay Marine Laboratory. The ICON station will provide a full suite of atmospheric and water quality data which will be retrievable via satellite.

Departmental Income Generating Activities

Activity/Programme	Income (J\$)
Lab Space Rental	185,000.00
Sale of Lab Manuals	935,000.00
Summer School	6,212,000.00
DLS Consultancy	527,056.00
Port Royal Consultancy (BDC)	2,249,745.75
Documentation Centre	388,294.00
MSc Programmes: MaTE	4,540,478.00
PPP	6,554,585.00

PUBLIC SERVICE

Dr Karl Aiken

- Member, Board of Directors & Chair, Caribbean Maritime Institute (CMI), Academic Council

- Member, CITES Scientific Authority of Jamaica
- Member, Fisheries Advisory Board of Ministry of Agriculture & Fisheries
- Board Member & Chair, Fish Sanctuaries sub-committee

Dr. Nouredine Benkeblia

- Member, Editorial Board of the Journal: Recent Patents on Food, Nutrition & Agriculture Bentham Publisher
- Member, Serial Editor of Potato Issues & Serial Editor of Citrus Issues – Global Science Publisher
- Chairperson, **SERT** (Roots and Tubers Section), International Society for Horticultural Science
- Editor, *Agricultural Science Research Journal*
- Member, Editorial Board, *Journal of Food Technology & Processing*.

Mr. Frederick Boyd

- Member, Standards Subcommittee, Jamaica Organic Agricultural Association (JOAM)
- External Examiner, Joint Board of Teacher Education (JBTE).

Dr. Dayne Buddo

- National coordinator, Marine Invasive Group NEPA

Dr Jane Cohen

- Member and Deputy Chair, Scientific Authority (CITES) of Jamaica
- Member, Alien Invasive Species Working Group of Jamaica

Ms. Marcia Creary

- President, Jamaica Institute of Environmental Professionals.
- Member, International Society for Reef Studies.
- Member, Caribbean Academy of Sciences.
- Node Coordinator, Northern Caribbean and Western Atlantic Node, Global Coral Reef Monitoring Network (GCRMN)
- Focal Point, Jamaica Coral Reef Monitoring Network (JCRMN)

Mr. Peter Gayle

- 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. 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

- Member, Board of Directors, Jamaica Agricultural Development Foundation
- Member, National Committee to Develop Guidelines for the Aquaculture Industry in Jamaica
- Member, National Shrimp Aquaculture Policy Sub-Committee
- Scientific Member, The National Bioethics Committee of Jamaica

Dr. 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, *Jamian Journal of Science and Technology*

Professor Dale Webber

- Chairman, CXC panel on CAPE Environmental sciences
- Chairman and NGO Member, Board of Directors, Environmental Foundation of Jamaica.
- Member, National council on Ocean and Coastal Zone Management (NCOCZM) Ministry of Foreign Affairs and Foreign Trade.
- 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, University of Technology BSc Degrees in Biological Sciences

Dr. Byron Wilson

- Chairman, National Iguana Conservation group
- Member, Working Group on Invasive Species, NEPA
- Member, IUCN SSC Iguana Specialist Group
- Member, IUCN SSC Amphibian Specialist Group

STUDENTS

Class of Degrees	
I	2
II i	7
II ii	52
Pass	32
Total	93

Types of Degrees 2010/2011 Graduates		
1	Botany Major	7
2	Zoology Major	13
3	Marine Biology Major	10
4	Experimental Biology Double Major	26
5	Environmental Biology Double Major	33
6	Biology with Education	1
7	Microbiology Major	3
	Total	93

Departmental Prizes

Don Skelding Prize for the best Preliminary level student –

Mr. Dexter Colquhoun

Devi Persad Prize for the best Plant Diversity student

Ms Shanique Jones

Avinash Potluri Prize for the best student in Animal diversity

Ms Patrice Grandison

Sasikala Potluri Prize for the best Seed Plant student

Ms Kerri-Ann Guyah

Lloyd Coke Prize for the best Plant Physiology student

Ms Nasheika Guyah

Vincent Hugh McKie Prize for the best 2nd year Zoology student

Mr. Canute Ricketts

Charlotte Goodbody Prize for the best 1st year student

Mr. Dervin Grant

Ivan Goodbody Prize for the best student to do Marine Biology

Ms Jenise Tyson

The last two Departmental prizes were awarded for the first time in 2010/11 through funds provided by retired professor, Ivan Goodbody.