



ANNUAL REPORT 2024-2025

James S. Moss Solomon Senior Chair in
Environmental Management

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Source: <https://www.wireconsultants.com/environmental-social-and-governance-esg-framework/>

Cover photos- eDNA sampling in the Kingston Harbour mangroves & Microplastics workshop participants going sampling.

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught." (Baba Dioum, 1968.)

Background:

The August 2024 to July 2025 period marked another significant year for the GraceKennedy Foundation, James S. Moss Solomon Senior (GKF-JSMSS) Environment Chair. Several projects were completed or achieved significant milestones, many of which were graduate student projects. Consequently, for the first time in many years the number of reported graduate projects benefiting from the GKF-JSMSS funds is significantly reduced. At the start of 2024/25, we welcomed two new graduate students to the Marine graduate group. Five new research graduate students will join the group in 2025/26 and these will continue to be assisted.

The Department of Life Sciences (DLS), a department of 70 academic, ancillary and support staff and almost 400 students at both graduate and undergraduate levels affords excellent opportunities for not just environmental stewardship but for application of social and governance principles, thus fulfilling the ESG agenda.

The Environment portfolio, however, has been the area with greatest involvement as opportunities emerged to contribute to regional interventions in microplastics monitoring, eDNA sampling of Kingston Harbour mangroves and involvement in dolphin-fishery interactions research through a new graduate student. On-going graduate research projects continued to be prominent but many are now at the writing and thesis submission phase. The GKF-JSMSS funds were nevertheless able to assist with funding for statistical and writing support for these students.

The strategic objectives of the Mona Campus and FST has been what guides the Department of Life Sciences to recognize its position and realize its contribution via specific and unique areas. The headship of Life Sciences has also facilitated wider social involvement. In addition to local community engagement, social intervention continues to involve strategies that help create a caring, accountable, motivated and professional (CAMP) staff as well as recognition of high performing students through the DLS Honour Society. This year the DLS Internship course for final year students saw 28 students over two semesters, obtaining invaluable experience and exposure at facilities across Jamaica and Trinidad and Tobago.

Overall the GKF-JSMSS chair has conducted environmental sustainability activities for a **range of persons** including Interns (28), Graduate students (8), DLS/CMS/DBML staff (4), Honor students (18), national and international audiences at workshops and meetings (158). Furthermore through governance of Life Sciences and social interventions within and between departments another **370 persons** have benefitted; **totaling 586 persons** for the 2024/25 reporting period.

This report will be divided into the three main sections in keeping with the ESG emphasis of Environmental stewardship, **social** outreach and effective **governance**. The report sections are:

1. Research Activity and Achievements in New and Continuing Areas (ongoing graduate research and new project development)
2. Workshops, Seminars and Publications (sharing research with wide audiences)
3. Social Interventions- Student, Staff and Infrastructure Development

1. Environmental Research Activity and Achievements

One new area of research was funded by GKF-JSMSS funds during the period and some on-going research were brought to conclusion with thesis submission or project completion during the reporting period. The new research project by Ms. Christine O'Sullivan on 'Dolphin and Fish Trap Interactions in Jamaican waters' is detailed below.

1.1. Dolphin-Fisher Interaction:

Since at least 2000 fishers in Jamaica have been complaining about dolphins taking fish from their traps and nets, affecting their livelihoods. In 2015 Christine O'Sullivan and Ricardo Antunes were able to document bottlenose dolphins (*Tursiops truncatus*) in Bluefields, Westmoreland taking fish from fish traps after turning them upright (Figure 1). Once the problem was identified it became important to develop mitigation measures that would help reduce the conflict between fishers and bottlenose dolphins since some fishers were threatening to harm dolphins found near their traps and recent reports have indicated that some fishers have begun to kill dolphins.



Figure 1a, b, c, d. Bottlenose dolphin turning a fish trap in Bluefields, Westmoreland. ©Christine O'Sullivan & Ricardo Antunes

As part of her PhD work, Christine O'Sullivan will aim to:

- Assess how widespread the behaviour is;
- Determine whether or not the behaviours used by dolphins differs across the island; and
- Develop and assess potential mitigation measures.

In December 2024, in collaboration with Dr. Mauricio Cantor from Oregon State University, she conducted a pilot project in Bluefields to assess new monitoring methods and equipment and she is currently meeting with fishers across the island to assess additional project sites before submitting her permit applications to the National Environment and Planning Agency.



Figure 2. Fisher and one of the divers in Bluefields, Westmoreland in December 2024. ©Clarissa Teixeira



Figure 3. The non-harmful sampling station: which includes an underwater camera and an acoustic logger set in front of a Z-Antillean fish trap, and a camera inside of the trap. ©O'Sullivan & Cantor



Figure 4. Research team in Bluefields, Westmoreland in December 2024 (Clarissa Teixeira, Mauricio Cantor, Christine O'Sullivan and Jaedon Lawe (l-r).

1.2. KH mangrove assessment (TOC project) and eDNA sampling:

With the completion of the placement of interceptor barriers at the nine major gullies on the north shore of Kingston Harbour, the UWI was contracted to conduct monitoring for changes in the mangroves expected post intervention. The GKF also undertook extensive clean-up of solid waste from the mangrove fringes in areas most affected by the solid waste from the gullies. The next phase was therefore to assess mangrove areas to document expected changes/improvements in biodiversity due to the reduction in plastic deposition.

The objectives of the project were therefore to:

- a. Assess the effectiveness of the Interceptor Barrier deployment at Kingston Harbour Gullies in preventing plastic waste accumulation in the mangrove ecosystem
- b. Monitor mangrove ecosystem health and regeneration around select mangrove areas of the Interceptor Barrier installations
- c. Monitor biodiversity improvements within the select mangrove ecosystems using eDNA
- d. Contribute to policies and other upstream solutions using collected data and scientific publications

The parameters assessed included; % cover of solid waste, seedling type and density, adult tree type and density, adult tree DBH, adult tree height, prop root and/or pneumatophores density, animals (crabs/crab holes, birds e.g. ground nesting stilts) and eDNA using a protocol from NatureMetrics Ltd.

Five or six mangrove locations in Kingston Harbour representing mangrove areas affected by solid waste along with a control (station 6 in Fort Rocky Lagoon) were selected for the study. See Figure 5.



Figure 5. Kingston Harbour showing mangrove areas to be monitored during the project (1 - 6).

Mangrove monitoring commenced after the removal of all types of debris from selected areas during the clean-up activities conducted by the GKF team. Replicate 10 x 2 or 10 x 5 m areas at the seaward edge of the forest were sampled. Mangrove monitoring commenced in March, 2025 and will continue, biannually through to September 2027.

One set of e-DNA samples have been collected from the water and sediments by the sampling team (Figures 6, 7, 8 below).



Figures 6, 7, 8. Field sampling and processing for eDNA in the Kingston Harbour mangroves.

The schedule below indicates mangrove forest sampling for improved health and e-DNA sampling.

Year	Monitoring schedule											
	1st Mang. sample March 2025 (3 days)						2nd Mangrove sample- July 2025					
	1st eDNA sample July 2025 (2 days)						2nd eDNA sample- Nov. 2025					
Year 1	1 (3)	2	3	4	5 (3)	6	8	9(3)	10	11	12	
Mang.												
eDNA					3 (2 + 2)			7 (2 + 2)				
Year 2	13	14	15	16	17	18	19	20	21	22	23	24
					3 (2 + 2)				7 (2 + 2)			
Year 3	25	26	27	28	29	30	31	32	33	34	35	36
					3 (2 + 2)				7 (2 + 2)			

Green- Mangroves and solid waste monitored; Teal- eDNA (soil + water)

This is the first time that eDNA sampling has been used as a monitoring tool in Kingston Harbour and indeed in any of Jamaica's marine areas.

1.3. Graduate student progress updates:

1. Devannie Lyew (heavy metal contamination of mangrove oysters in Kingston Harbour) - Thesis examined and corrections being made.
2. Fabian Kyne- (Lionfish management in Tannereif Atol in Belize)- Thesis examined with oral scheduled for September 24, 2025
3. Jonathan Morris (Fish Aggregating Devices in Jamaican Waters)- Thesis examined and corrections being made.
4. Hugh Small (Effect of shading on seagrass communities)- writing .
5. Marcia Creary (Climate change and coral reefs)- writing
6. Patrice Francis (Mangrove blue carbon)- analysis and writing

The Marine Research group has accepted five new students in the 2025/26 academic year as Life Sciences accepted a record 14 new graduated students. See Figure 9 below.

The marine students will be working on a range of projects related to coral nursery development, water quality and plankton and microplastics assessment in Kingston harbor.



Figure 9. Life Sciences welcoming 14 new graduate students for the 2025/26 Academic Year.

Meetings with, and polling of researchers in Life Sciences revealed that most graduate students and early researchers needed statistical support to complete theses and generate research articles. They also needed general assistance and support to make progress in the writing of the thesis. The GKF-JSMSS funds were therefore used to assist with the provision of statistical assistance to several graduate students and staff, both individually and in a workshop setting. Consultant Dr Gavin Campbell was contracted and assisted to bring four projects to completion or in passing significant milestones. The GKF-JSMSS chair also supported a writing 'boot-camp' that is held every Thursday afternoon and facilitates graduate students sitting together and writing or processing data in a setting where they help each other set and achieve goals. This effort continues into the new academic year.

2. Workshops, Talks and Media Interviews

2.1 Presentations

The JSMSS Chair, presented at several seminar and special lectures during the reporting period. These included in-house seminars done as part of the Life Sciences seminar series (Figure 10) and the GKF-JSMSS presentation of the Chairs in October 2024 where Prof Webber presented on ‘Environmental Stewardship, Sustainability and the ESGs’ at the Grace Kennedy Foundation UWI Chairs in Environment and Management forum- ‘ESGs in Action’ at the UWI- Regional Headquarters on October 29th, 2024. In November 2024, she presented at the Department of Life Sciences seminar series on “Sargassum research at UWI (Mona)”.



Figure 10. Life Sciences Seminar series- Sargassum Research by GKF-JSMSS Chair.

In December 2024, Prof Webber was invited to present at the Caribbean coastal conference workshop on, “Sargassum Seaweed- Golden Opportunity for the Blue Economy?” Caribbean Coastal Conference, 2024 - “Achieving Balance: Development and preservation of Caribbean coastlines” December 9 - 11, 2024 in Kingston, Jamaica. See Figure 11.



Figure 11. Presentation slide from Caribbean Coastal Conference.

Prof. Mona Webber attended and presented at the International Youth Robotics Conference- 'Robotics and Turkey' on "Coastal Ecosystems- The Power of Three, and then the Deep Sea" in keeping with the theme "Submerged- using creative thinking and LEGO technology to explore the layers of the ocean and bring their learnings and ideas to the surface as students 'sea' into the future." Montego Bay- November 28 - 30, 2024. See Figure 12 below.



Figure 12. Prof Webber presenting at the Robotics and Turkey conference.

Finally in March 2025, Prof. Mona Webber presented on ‘Understanding Sargassum: opportunities for use in the Caribbean context’ to the Biology Department, College of Science and Mathematics, University of the Virgin Islands.

2.2. Workshops:

PEW Trust/TNC/CMS Blue Carbon workshop and an IAEA Microplastics workshop. The CMS co-hosted the 2nd workshop of the PEW/TNC Blue Carbon project, generated data to be included in the revision of Jamaica’s Nationally Determined Contributions (NDCs) to climate change under the Paris Agreement. The workshop was to validate the draft mangrove and seagrass maps as well as build capacity on field data collection of Blue Carbon data using IPCC methods and to international standards. December 2 - 3, 2024.

A microplastics workshop was held between July 2 and 11, 2025, the International Atomic Energy Agency (IAEA), in cooperation with the Government of Jamaica through the University of the West Indies’ Centre for Marine Sciences in the Department of Life Sciences, hosted a 9-day regional training course on sampling and analysing microplastics using nuclear and isotopic techniques. Sixteen (16) participants from five Caribbean countries; Jamaica, Trinidad and Tobago, Dominica, Antigua and Barbuda, and Belize participated in the training and received certification. Equipment provided by the IAEA for the workshop included a manta trawl, FTIR Spectrophotometer, mechanical shaker and sieves, non-plastic filtering devices and miscellaneous glass or metal lab-ware. These equipment and supplies remained at the UWI after the workshop allowing us to conduct continued microplastics monitoring and reporting. See Figures 13, 14, 15.



Figures 13, 14, 15- IAEA/CMS Microplastics workshop, Manta trawl and boat work day.

IAEA Nice conference was attended by the GKF-JSMSS chair who also attended and participated at the One Ocean Sciences Congress June 3rd to 6th 2025 in Nice France. The Congress saw 2150 participants from 113 countries, and included 9 major keynote speakers, over 500 oral presentations, 620 posters were displayed at La Baleine (Green Zone) and 33 town hall sessions. These included a co-authored poster titled “The Caribbean Microplastics

problem; harmonization of protocols through the IAEA”. This publication demonstrated the work of the UWI and the International Atomic Energy Agency (IAEA) through a Technical Cooperation Regional Meeting to Harmonize the Operational Protocols for the collection, identification and counting of Microplastics in Beach Sands and Seawater. Nine countries (Antigua & Barbuda, Bahamas, Belize, Dominica, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines and Trinidad & Tobago) were facilitated in the discussion to standardize the methodologies for determining the abundance of Microplastics with continued training planned at the Centre for Marine Sciences of the University of the West Indies Mona Campus for July 2025. See Figures 16, 17, 18.





Figures 16, 17, 18. Prof Mona Webber at the One Ocean Science Congress and the poster co-authored and contributing to the theme Science for a thriving ocean.

The event also afforded the opportunity to meet with Matthias Egger, Scientist with the Ocean Cleanup who also attended and presented at the conference. Figures 19, 20.



Figures 19, 20. Matthias Egger with the JSMSSC at the One Ocean Congress in Nice, France and the Ocean Cleanup poster featuring Kingston harbour

2.3. Media Appearances, Interviews and Publications (sharing scientific findings to a range of audiences).

The GKF-JSMSS chair also co-authored two new publications with three book chapters being in-press. Name of graduate student co-authors are underlined.

- Machado, Carla Botelho, Robert Marsh , Jessica K. Hargreaves, Hazel A. Oxenford, Gina-Marie Maddix, Dale F. Webber, **Mona Webber**, and Thierry Tonon. 2024 "Reply to Gobert et al.: The need for more research to understand changes in new pelagic sargassum ecosystem during its advection" Proceedings of the National Academy of Sciences (PNAS), **2024**, 121 (34) e2412718121, <https://doi.org/10.1073/pnas.2412718121>
- Haye, Dannielle, Carla Machado, Robyn Young, Dale Webber, Bhaskar Rao Chinthapalli, Thierry Tonon, **Mona Webber**. **2025**. Influence of pelagic *Sargassum* spp. mulch and compost on seed germination and seedling growth of corn (*Zea mays*), scotch bonnet pepper (*Capsicum chinense*) and tomato (*Solanum lycopersicum*). *Phycology* **2025**, 5(3), 44; <https://doi.org/10.3390/phycology.5030044>
- **Webber, M**, R. Young, G. Persad and D. Webber. 2025 Zooplankton of the Insular Caribbean. Book Chapter *IN*. Caribbean Biodiversity- Ed. Professor T. Pullaiah. **In Press**.
- Webber, D, R. Young, H. Small and **M. Webber**. 2025 Phytoplankton of Caribbean waters. Book Chapter *IN*. Caribbean Biodiversity- Ed. Professor T. Pullaiah. **In Press**.
- Young, R., **Webber, M.** and Webber, D. 2025. Fish and Fishable species Diversity of the Caribbean: A collection of Records. Chapter 12. *IN*. Caribbean Biodiversity- Ed. Professor T. Pullaiah. **In Press**.

3. Social Interventions; Staff, Student and Infrastructure Development

3.1. Student Honour Society

In October 2024 eight students were inducted into the **DLS Honor Society**. The Students received the Honor Society pin, a certificate and a UWI-Bookshop gift certificate. This was the 8th batch of DLS honor students to be inducted. JSMSS funds assisted with the induction and incentives for the students. Figure 21.



Figure 21. Department of Life Sciences Honor Society inductees attending the induction luncheon.

In March 2025 another eight students were inducted into the DLS honour society. The event was attended by all Life Sciences staff. The tribute to the honour society students was given by guest speaker, Mr. Ainsley Henry. Figure 22.



Figure 22. Mr. Ainsley Henry CEO and Conservator of Forests (centre) with the DLS honour society inductees and lecturers, March 2025.

3.2. Outreach and in-reach activities.

The GKF-JSMSS chair participated in several outreach and in-reach group activities involving members of staff and students that facilitated social interaction and intervention.

Most notable and benefitting from GKF-JSMSS funds was the 'back to school' assistance.

Figures 23, 24, 25.



Figures 23, 24, 25. Back to school initiative for Life Sciences staff.

The GKF-JSMSS Chair hosted the GJF-Kingston Harbour clean-up team in Life Sciences along with TOC founder and CEO Boyan Slack. The visitors wanted to know about the value of the solid waste barriers and other interventions had on the mangroves. Figures 26, 27.



Figures 26, 27. Meeting with TOC (Boyan Slack and team) and GKF (Caroline Mahfood and team)

3.3. Student development - DLS student interns

Twenty-eight student interns accessed the 2024/25 Internship course coordinated by Professor Webber. These were employed at a range of agencies (**Discovery Bay Marine Laboratory- DBML**; **Port Royal Marine Laboratory, CMS**, **Environmental Foundation of Jamaica- EFJ**; **Jamaica Public Gardens**; **NEPA- National Environment and Planning Agency**; **Scientific Research Council- SRC**; **IMA- T&T and Fildfowl Trust T&T**. JSMSS funds assisted with stipends for students working at the CMS. See collage of pictures below (Figure 28).



Figure 28. Collage of DLS interns on the job at various agencies.

3.4. Infrastructure improvements:

The GKF-JSMSS funds were used to develop areas and spaces used for hosting students and their teachers for environmental education. The Zoology museum (Figure 29) and displays was one such area that was refurbished and treated for termite infestation.



Figure 29. Biology museum used to host visitors to the Department of Life Sciences (Mona Campus).



Figure 30. Eyewash and deluge station installed in the laboratory

The GKF-JSMSS chair through deliberate interventions, and assisted with the improvement in the learning experience in Life Sciences laboratory classes, where our students spend over 50% of course hours, by the upgrade of the IT infrastructure. All switches and 13 of 23 wireless access points (APs) were installed for all blocks and the Biology Lecture Theatre (BLT). Our students were thus able to engage on-line resources for species identification, and complete and upload course-work material during the laboratory sessions. We were also able to improve the safety of these labs with the addition of eye-wash stations and emergency deluge systems.

3.5. Board/Committee Appointments and Awards

The GKF-JSMSS chair continues to serve the NRCA Board, NEPA- TRC, NEPA Biodiversity Committee (Chair), NEPA Scientific Authority- CITES. JCP- CBFacey foundation board re-started operations in 2024/25 and the GKF-JSMSS Chair was able to assist with the awarding of US\$130,000. in grants to seven organisations including; White River Foundation, Port Royal Marine Lab, Holland Bay Crocodile Sanctuary and JET.

4. Looking Forward

The year ahead (2025/26) will mark the end of the 10-year tenure of the GKF-JSMSS chair at the UWI (Mona Campus). The process must therefore commence to find a new chair of environment. I remain very honoured and grateful for the opportunity to have been named to this prestigious chair and will do my best to ensure that the work of the James S. Moss Solomon Chair in Environmental Management continues.

As we continue to work towards greater and sustained environmental protection and the continued achievement of the UN-Sustainable Development Goals, we note our activities already align with many of these goals: SDG-14 (Life below water), SDG-13 (Climate Action), SDG-4 (Quality Education) and SDG-17 (Partnerships). Many of these areas also align with the UWI strategic goals and Jamaica's Vision 2030.

Environmental conservation is always at the core of our efforts, and continued outreach and environmental education is critical to our success because, *"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught."* (Baba Dioum, 1968.)

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught." (Baba Dioum, 1968.)



SDGs and their alignment with ESGs. Source- Sustainability 2021, 13(15), 8503; <https://doi.org/10.3390/su13158503>

5. Financial Report:

The 2024/25 financial report from the Bursary (Table below) is up to July 17, 2025 which is when spending ended for the 2024/25 AY.

Commitments at the end of July could be captured by the report as goods have not yet been received. These are as follows:

Known CMS-DLS Expenses as at August 2024-July 17, 2025 from James Moss Solomon Funds	Expenditure
Advance -August 2024	\$ 250,774.98
Earl Sterling - Lab 6 AC	\$ 189,500.00
Earl sterling- AC BLT	\$ 193,500.00
Advance -Dec 2024	\$ 312,747.55
Integrity Global- Switches DLS	\$ 1,502,238.57
Scientific Research Council -Hugh PHD	\$ 892,176.00
Elementar -2025 consumables & servicing- Patrice PhD	\$ 981,778.20
Advance - Jan 2025	\$ 303,884.31
Advance-Jan 2025	\$ 310,088.20
Advance-Feb 2025	\$ 305,242.87
Advance- April 2025	\$ 300,558.12
Advance - May 2025	\$ 307,801.22
Advance - July 2025	\$ 326,155.53
Advance – August 2025	\$ 300,000.00
Total expenses to date	\$ 6,476,445.55
Balance brought forward from 2023/2024 funds	\$ 2,086,155.97
2024/2025 income	\$ 5,050,000.00
Total available income for 2024/2025	\$ 7,136,155.97
<u>Estimated balance excluding bursary admin fees (J\$750,000) and depreciation</u>	<u>\$ 659,710.42</u>

September 8, 2025.