WINDWARD ISLANDS RESEARCH & EDUCATION FOUNDATION

2025 Annual Report

Front cover photos:

Attendees of the Caribbean Research Ethics Education initiative (CREEi), which was funded over a 10 year period by grants from the Fogarty Foundation from NIH. From rear left to right: Kareem Coomansingh (GRD, WINDREF)/SGU, Derrick Aarons (JA, International Bioethics Committee), Zain Hernandez (BEL, BTEC), Bernardo Garcia Camino (MEX, UAQ), Janice Gaspard (JA, National Bioethics Committee), Copeland Stupart (JA, UTECH), Andrea Kanneh (TT, UTT), Alister Rechea (GRD, Gov), Rosmond Adams (SVG, PAHO) , Carolyn Neuhaus (USA, Hastings Center), Deborah Charles – Stijnberg (SUR, National REC), Sharmella Roopchand- Martin (JA, UWI), Kelly-Ann Gordon-Johnson (JA, Gov), Calum Macpherson (GRD, WINDREF/SGU), Sherry Ephraim-Le Compte (SLU, Gov) , Trevor Noël (GRD, WINDREF/SGU), Tracelyn Compton (JA, National Bioethics Committee), Renata Manbodh-Mitchell (GRD, SGU), Shereen Cox (JA, Uni of Norway) , Nandy Noel (GRD, Gov), Cheryl Macpherson (GRD, WINDREF/SGU), Antia Walcott-Mitchell (JA, UHWI), Donna McKinnon (GUY, UG), Cheryl Dijksteel (SUR, Gov), Paul Cummins (USA, Clarkson University), Nakita Francis-Williams (GRD, WINDREF)

Mission Statement

WINDREF seeks to advance health and sustainable environmental development through multi -disciplinary research and education programs. WINDREF strives for program excellence by promoting collaborative relationships between internationally recognized scholars and regional scientists, and by adhering to the highest ethical and academic standards in the design and conduct of research.

Goals

- To provide a scientific resource centre capable of coordinating international collaborative research of the highest caliber in the areas of medicine, medical and veterinary public health, environmental health, anthropology, sociology, ecology, marine and terrestrial biology, and ethics.
- To provide a first rate academic opportunity to scientists from the Caribbean and around the world through unique research opportunities that enhances the knowledge and welfare of local and international communities.
- To conduct applied scientific research for the benefit of community and health development at the local, national and international levels.
- To share relevant scientific information with local and international communities in the pursuit of evidence-based policies.

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Director's Report on WINDREF Activities in 2025

The year 2025 marked a significant transition in the leadership of the Windward Islands Research and Education Foundation (WINDREF) with the passing of Baroness Ros Howells, WINDREF's 4th President, and the appointment of Dr. Sir Kirani James as our 5th President. Born Rosalind Patricia-Anne George in St. Patrick's, Grenada, Baroness Howells spent much of her childhood in Crochu, St. David's. Throughout the 1950s and 1960s, during a period of significant Commonwealth migration to the UK, Baroness Howells emerged as a leading voice for racial equality and community cohesion.

In recognition of her outstanding service, she was awarded the OBE (1994) and appointed to the House of Lords (1999–2021). Throughout her career, Baroness Howells remained deeply committed to Grenada where she supported numerous Grenadian organizations, served on St. George's University's (SGU) Academic Advisory Board during a key decade of its growth, and later joined SGU's UK Trust. She joined the WINDREF Board of Trustees in 2005, becoming our President in 2013. She received the SGU Distinguished Service Medal (2014) and an Honorary Doctorate of Civil Law from Northumbria University. Her commitment to community, education, and social justice inspired all who knew her. Baroness Howells' legacy continues to guide WINDREF's mission of integrity, service, and compassion. In 2010, WINDREF's Sports for Health Program was named after her as the Baroness Howells Sports for Health Program, which continues to this day.

Baroness Ros Howells of St. Davids

At the 2010 House of Lords Dinner, which focused on obesity and its complications, was 17 year old Kirani James who had recently come to prominence in the athletics world through his victories in the 200m and 400m at the 2009 World Youth Championships, he went on to dominate the junior circuit, winning the World Junior Championships (2010) and the NCAA Outdoor Championships (2010, 2011) while earning his BSc in Business and Commerce from the University of Alabama. His breakthrough came at the 2011 World Athletics Championships in Daegu, where he became Grenada's first World Champion. The following year, he secured Grenada's first-ever Olympic gold medal (London 2012), later completing a historic Olympic trifecta with silver (Rio 2016) and bronze (Tokyo 2020). Beyond his athletic achievements, Sir Kirani is a dedicated ambassador for Grenada and the Caribbean. He actively supports sports development, youth mentorship, and education initiatives. His honors include the Knight Grand Cross of the Most Distinguished Order of the Nation, Commander of the Order of the British

Empire (CBE), Order of Grenada (COG), and an Honorary Doctor of Laws (LLD) from the University of the West Indies Global Campus. Sir Kirani embodies the values of perseverance, humility, and integrity. We are delighted that Kirani accepted the WINDREF Board's invitation to serve as our 5th President.

At the annual WINDREF Board Meeting held on December 1, 2025, Mr. Alistair McPherson, Ms. Chantal Coady, and Dr. Jonathan Ashcroft were unanimously elected as members of the WINDREF (UK) Board of Trustees. Each brings close ties to Grenada and a wealth of professional expertise that will further strengthen the Board's global reach and impact.

Dr. Alistar McPherson

Dr. Sir Kirani James

Ms. Chantal Coady

Dr. Jonathan Ashcroft

In2025, the foundation was engaged in 20 active grant-funded projects supported by a diverse range of international agencies, governments, and private donors. These initiatives collectively advance research, community development, environmental resilience, health equity, and education across Grenada and the wider Caribbean.

Several grants focus on sustainability and ecological restoration. These include the Grenada Wastewater Recycling Project (Caribbean Development Bank), the Safeguarding Telescope's Coastline project (Caribbean Biodiversity Fund), and Coral Reef Restoration in the Grenville Bay Area (GEF Small Grants Programme). Additional environmental initiatives—such as the Innovative Nature-based Solutions to Enhance Community Resilience (ING) Program, the Global Water Partnership Project, and the Caribbean Measurement, Reporting, and Verification Hub—support regional adaptation to climate change and sustainable resource management.

Health-focused initiatives span diagnostics, cancer care, and child development. These include the Sample-to-Answer Arboviral Diagnostics Project (NIH sub-award from UCSC), the Caribbean Cancer Portal (PAHO), the Caribbean Center for Child Neurodevelopment (Private Donors), and the Improving Metastatic Breast Cancer Care and Equity in the Caribbean Project (UTT). The Baroness Howells Sports for Health Program also promotes wellness through physical activity. Educational and social empowerment projects include the Caribbean Research Ethics Education Initiative (NIH-Fogarty International Center), Conscious Discipline Grenada Renewal (Becky Bailey Foundation), and the Integrated Early Childhood Development Strategy (UNICEF). Community-based programs, such as Afterschool Programmes (McGuinness Foundation) and the Return of Children's Happiness Programme, strengthen youth engagement and well-being in mainland Grenada and Carriacou. Several projects address violence prevention and gender equity, including Preventing Intergenerational Violence through Empowerment Coaching for Fathers (CFLI) and the Community-based Intervention Program to Support Children's Rights and Prevent Gender-based Violence (European Commission). The Consultancy for Construction and Deployment of FADs (UBEC, Government of Grenada, World Bank) supports sustainable fisheries within the blue economy framework. Meanwhile, the UNFCCC Regional Collaboration Center for the Caribbean (RCC St. George's) enhances regional capacity for climate action and coordination. These initiatives underscore WINDREF's continued leadership in environmental conservation, public health innovation, and community resilience.

Three projects were completed in 2025 viz: Innovative Nature-based Solutions to Enhance Community Resilience in Grenada (ING) Program, the Capacity Building in Safety at Sea, Onboard Fish Handling and Dropline Techniques for St. Vincent and the Grenadines Fishers, and the coral reef restoration efforts within the Grenville Bay Area through the integration of community knowledge and leadership. A total of eight new grant applications were submitted to donors for funding in 2025, and we await the outcome of these applications.

Throughout 2025, WINDREF's work resulted in multiple peer-reviewed publications, conference presentations, and virtual contributions to international symposia and webinars. These accomplishments are detailed in the accompanying appendices.

On behalf of the members of the Grenada, United Kingdom, and United States Boards of Trustees and Directors, I extend sincere gratitude to all our collaborators, partners, and donors for their unwavering support. Your contributions made 2025 a remarkable year for WINDREF, and we look forward with optimism to another year of impactful research, education, and service in 2026.

Calum N.L. Macpherson
Director, WINDREF

WINDREF Organization

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- Mr. Kendon James, Co-Project Manager, Safeguarding Telescope's Coastline, using a Living Shoreline Approach (TLS) Program
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- Mr. Michael Cahill, Legal Support, USA
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- Mrs. Stephanie Holmes, Saving Brains Project Manager
- Mrs. Elsa Chitan, Co-Project Manager, Laboratory
- Ms. Markeda Fletcher, Co-Project Manager
- Ms. Sarah Telesford, Assistant Project Manager, Laboratory

Administration—United States

WINDREF (USA) was established as a 501(c) 3 non-profit organization to facilitate coordination of the USA activities and to administer charitable donations from the United States and worldwide. Its goal is to enhance the development of WINDREF's research and educational programs. The office is located in New York and is administered by Ms. Margaret Lambert, Secretary/Treasurer of WINDREF. Mr. Michael Cahill provides legal support.

Administration—United Kingdom

WINDREF (UK) was set-up as a charitable trust in Winchester, England in 1999 to promote collaboration between WINDREF scientists and academic centers of research in the United Kingdom and the European community. A Board of Trustees was appointed in 1999 to oversee the activities of

WINDREF (UK). The office is located in London. Mr. Patrick Orr serves as the WINDREF (UK) accountant, along with Mr. Stan Lee serves as the treasurer, provide oversight of the financial operation and chartable status of WINDREF (UK). Mr. Alistair McPherson will assume the role of Treasurer with the retirement of Mr. Patrick Orr in 2025.

Senior Research Fellows

- Hugh W. Ferguson, BVM&S, PhD, Dipl. ACVP , MRCVS, FRCP
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- Duane Gubler, ScD
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WINDREF Lectures

Research Lecture Series:

1994: Stephen Morse- "Emerging and Re-emerging Viruses"
1995: Stanley Weiss- "The HIV Pandemic"
1996: Duane Gubler- "Dengue: A global problem of increasing importance"
1997: Graham Sergeant- "Sickle Cell Disease"
1997: David C Clyde- "Health and Disease in Grenada: A historical perspective"
1998: Leslie Ramsammy- "Tackling our Agricultural and Medical Problems through One Health One Medicine Approach"
1998: Robert Redfield- "The Epidemiology of HIV/Aids"
1999: MS Swaminathan- "The Green Revolution"

WINDREF Lecture Series:

2000: Sir Kenneth Stuart, MD, DSc (Hon)- "Caribbean Health Research Needs"
2001: Professor Adedokumbo Lucas, MD, DPH, DSc (Hon)- "International Collaboration for Health Research"
2002: Lord Walton of Detchant, MBBS, MD, DSc, MA (Oxon), FRCP- "A Doctor in the House"
2003:Professor David Molyneux, MA, PhD, DSc, FIBiol- "Success and Failure in Parasitic Disease Control: Lessons Learnt?"
2004: Lord Soulsby of Swaffham of Prior, MRCVS, DVSM, MA, C.Biol., F.I. Biol., DSc (Hon)- "Zoonoses, Old and New. . . the Price of Freedom is Eternal Vigilance"
2005: Mary-Jeanne Kreek, MD- "Drug Abuse and Addictions: Some Scientific Approaches to a Global Health Problem"
2006: Eric Ottesen, MD- "Understanding the Science, Attacking the Problem: Lymphatic Filariasis and Beyond"
2007: John Rouben David, MD- "Leishmaniasis: A novel approach to control visceral leishmaniasis and another to treat cutaneous leishmaniaisis"
2008: Professor Sir Andrew Haines, MBBS MD FRCGP FFPHM FRCP FMedSci- "Climate Change, Energy Use and Health in the 21st Century"
2009: Yvette Sheline, MD- "Brain Imaging: New Insights into Neuropsychiatric Disorders"
2010: Valentin Fuster, MD, PhD- "The worldwide challenge of cardiovascular disease"
2012: Baron Peter Piot, MD- "Global health in a changing world"
2013: Robert Gallo, MD- "Viruses and EpiEpidemics: Our attempts to control them with an emphasis on HIV and AIDS"
2014: John Strasswimmer, MD, PhD- "Dr Albert Schweitzer, his life, legacy and the future: A celebration of his centenary"
2014: Desiree LaBeaud, MD, MS- "Chikungunya and Dengue in Grenada and the Americas: What are we in for?"
2015: Ruth Macklin, PhD- "Ethical Challenges in Confronting Disasters: Some Lessons Learned"
2016: Ian McConnell, BVMS, PhD, MA, FRSE- "One Health: Lessons from the Past,

and Future Opportunities"
2017: Kenneth R. Bridges, MD- "Rise of Sickle Cell Disease and Novel Approaches to its Treatment"
2018: Timothy Endy, MD, MPH- "Understanding Dengue Pathogenesis and Essential Areas for Research"
2019: Timothy Endy, MD, MPH- "Overview of Dengue disease research at SUNY Upstate Medical University and prospective primary dengue study with St George's University/ WINDREF"
2022: Prof. Paul Garner, Scandals in Global Public Health
2023: Prof. Gareth Williams, Edward Jenner: a man who changed the face of the world
2023: Dr. Peter Hotez, Global Vaccines and Vaccinations: The Science vs The Antiscience
2024: Prof. Jacqueline McGlade, Natural Prosperity: Understanding the True Value of Nature's Contributions to People

Mike Fisher Memorial Award Recipients

Mike Fisher graduated from King's College, London with a PhD in chemistry/ pharmacology. He joined Merck in 1957 and worked with them as vice president of research and headed a lab of 60 research scientists until 2004.

It was his scientific intellect and observational scholarship which led to perhaps his most profound discovery: that of the fungus, Streptomyces avermillis from which the drug ivermectin was derived. In the 1970's his lab was receiving thousands of soil and plant samples from all over the world which he was screening for their effects on a number of organisms. One sample sent to Mike Fisher from Dr. Satoshi Omura from a golf course bunker in Japan, contained S. avermillis which was lethal to Mike's lab mice and when others may have discarded the compound Mike persevered and tested ever more minute doses of the substance. He thus discovered a new powerful drug which was discovered to be effective against roundworm parasites. Mike received the Thomas Edison award for creative discovery and the veterinary and medical world received a compound that revolutionized the treatment and cure of a myriad of infectious diseases. Today as a result of the discovery of ivermectin over 35 million people no longer live under the threat of inevitably going blind from onchocerciasis (river blindness), millions more have been spared the gross disfigurement from lymphatic filariasis (elephantiasis and hydrocoele) and dogs and cats (heartworm), pigs, cattle, sheep, goats and horses live a healthier life because of ivermectin. Mike passed away at his Bel Air plantation home in Grenada on 20th April 2005. So many people and animals have benefited from Mike's work. In 2015, the Nobel Prize for Physiology or Medicine was awarded jointly to Drs. William C. Campbell and Satoshi Omura for their role in the discovery of ivermectin.

The Mike Fisher Memorial Award Recipients
2006 – Lord Lawson Soulsby
2007 – Dr. Keith B. Taylor
2008 – Lord May of Oxford
2009 – Dr. John David
2010 – Lord John Walton
2011 – Prof Ade Lucas
2012 – Dr. Donald Hopkins
2013 – Prof R.C. Andrew Thompson
2014 – Prof Alan Fenwick
2016 – Sir Gordon Conway
2017 – Dr. Charles R. Modica
2018 – Prof Sarah Cleaveland
2019 – Prof Janet Hemingway
2020— Prof. Robin B. Gasser
2021—Prof Richard Horton
2022—Dr. Peter Hotez
2023—Prof. Jacqueline McGlade

Current Research Projects

Sample-to-Answer Rapid, Multiplexed and PCR-Free Detection of Arboviral Fever Diseases in Resource Limited Settings

Background:

Arthropod-borne viruses (arboviruses) comprise many of the most important 'emerging pathogens' due to their geographic spread and their increasing impact on vulnerable human populations. Arboviral diseases are poised to become more common with globalization and climate change. In the Caribbean region in particular, recent explosive Dengue virus (DENV), Zika virus (ZIKV), and chikungunya virus (CHIKV) epidemics have highlighted how rapidly these agents can spread within new regions. All 4 DENV serotypes have been reported in Grenada, and dengue continues to remain a significant cause of acute febrile illness (AFI). However, despite their importance and prevalence, diagnostics for arboviral infections remain limited in resource limited settings due to their cost.

Diagnostics are lacking at health care centers making accurate diagnosis of these infections impossible, and clinical diagnosis of arboviral infections is not reliable due to their non-specific presentations. Reverse transcriptase polymerase chain reaction (RT-PCR) remains the gold standard for diagnosis but is expensive and only available at reference labs. Rapid antigen and antibody assays may be deployed as point of care testing but have poor sensitivity resulting in false negatives. Without accurate diagnostics, arbovirus outbreaks are detected late, and sporadic cases go undetected, leading to delayed responses to outbreaks, ineffective efforts to prevent further disease spread, and substantial introduction risk to naïve countries. There is an urgent need for easy-to-operate and rapidly deployable clinical diagnostics tools that can provide sample-to-answer manner.

This research program aimed to develop and evaluate field deployable rapid assays for detection of emerging viral pathogens, with DENV being used for initial testing. The integrated diagnostic platform utilizes a novel surrogate approach, and open-source robotics technology. The system is designed to initiate diagnosis from serum/plasma/blood and provide a sample-to answer diagnostic within less than 35 minutes. This collaborative interdisciplinary program will build upon ongoing field surveillance of arboviral infections in Grenada. Collaborative work for this NIH/ NIAID R01 project involves integration of biosensor engineering (Yanik Group), molecular virology (Pinsky Group), and infectious diseases epidemiology (LaBeaud Group) to build and field-test this novel point-of-care viral diagnostic platform with Windward Islands Research and Education Foundation (WINDREF) and St. George's University teams. This work is innovative, as it utilizes a novel approach to solve a long-standing problem, rapid and accurate arboviral diagnosis in health care settings. As this project finalizes, the Yanik group continues research into optimizing the this novel assay to become operable in a clinic setting.

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Study Design:

This project is roughly divided into two major components: a field epidemiologic study to recruit patients with AFI for arboviral testing with current gold standard RT-PCR assays, and the development and modification of the novel biosensor assay followed by field testing using the collected samples.

To this end, WINDREF and the LaBeaud lab are have completed recruitment of participants for this study (n=643), testing for arboviral infections using RT-PCR, and collecting participant surveys to perform and epidemiologic study of arboviral infection risk factors in Grenada. We recruited patients >1 year of age who presented to healthcare facilities with fever and simultaneously performed community outreach and recruitment with home visits to recruit more participants with mild febrile illness who otherwise would not have presented for healthcare. We then collected serum and administered a survey to determine risk factors for arboviral infection.

Once samples were collected, they were tested at WINDREF using a multiplex RT-PCR assay which detects DENV, ZIKV, and CHIKV. Additionally, when available, samples were tested with rapid DENV IgM/IgG assays to provide timely feedback to participants. Samples were then tested using the novel antigen assay. Briefly, serum was added to DENV specific antibodies, magnetic beads that bind the antibodies, and dielectic beads that contain fluorescent dyes. If the participant sample contains DENV antigens, a complex will form between the magnetic and dielectic beads (ie the surrogate). The next step involves detection of fluorescent signal given off by the dielectic beads that are part of the viral antigen complex using a membrane with small channels that enriches the dielectic beads, with the fluorescence from the beads then measured using an optical detection.

Results to date:

We have recruited 643 participants experiencing fever throughout Grenada from health centers, clinics, and community visits. 39% of participants have been recruited from St. George Parish, 22% from St Andrew, and 16% from St. Patrick, with the remaining participants evenly distributed between the other parishes. 42% of participants are male, 58% female, and 83% are Afro-Caribbean. The majority of febrile illness samples and dengue cases have been detected between the months of June and October, corresponding with the rainy season, which is expected of arboviral infections (Figure 1). We noted an abrupt increase in cases during August-September 2024, which corresponds to reported DENV-2 transmission detected by the Grenada Ministry of Health during this time period. Of samples tested by RT-PCR, approximately 15% have been DENV positive (Figure 2). We have detected one CHIKV case in April 2024, and 0 cases of ZIKV infection. 84% of these AFI cases remain undiagnosed via this testing protocol. In comparing RT-PCR testing with rapid IgM/IgG testing, we have observed, as expected, poor sensitivity. Preliminary epidemiologic analysis has been performed to determine identifiable risk factors correlating with acute DENV infection based on survey results. Among clinical data Joint pains (OR 1.68 (1.07-2.64)) was associated with DENV infection, while respiratory symptoms (OR 0.433(0.17-0.66)) were associated with non-DENV febrile illness. Univariate analysis revealed St. George Parish, Non-Afro-Caribbean race, higher education, living in an apartment, living in concrete structures, having air conditioning/window screens, students, travel, and collection of samples from SGU clinic as potential risk factors. These unexpected correlates likely correspond to the disproportionate amount of cases identified among SGU students and staff which bias our data. Adjusting for this potential risk factors in a multivariable logistic regression model, only non-Afro-Caribbean race, and living in an apartment remain significantly correlated to DENV infection, while higher education is associated with non-DENV AFI (Table 1).

Dr. Yanik's group has conducted baseline validation testing of their novel diagnostic system using 86 den-

Figure 2: Results of RT-PCR testing of AFI serum samples

gue RT-PCR–positive and 74 RT-PCR–negative patient samples. Analysis of clinical signals demonstrated clear separation between infected and non-infected groups. ROC analysis further confirmed strong diagnostic performance, yielding an AUC of 0.998, 100% sensitivity, and 96% specificity at the optimal decision threshold (Figure 2).

Ongoing and Future Studies:

We will continue final epidemiologic analysis of our collected data over the next several months and submit a manuscript for publication. We will additionally perform serotyping of DENV positive cases and sequence select isolates to determine the genetic ancestry of the viruses causing illness in the 2024 epidemic period, and those circulating prior and after. The Yanik lab will continue analysis of collected data from their assay validation and continue optimization of this assay for point-of-care applications. Finally, these samples provide a valuable repository to determine causes of undifferentiated febrile illness in Grenada, and we will seek funding to test for other cryptically circulating pathogens such as leptospirosis, Oropouche virus, and Mayaro virus.

Funding and Acknowledgement:

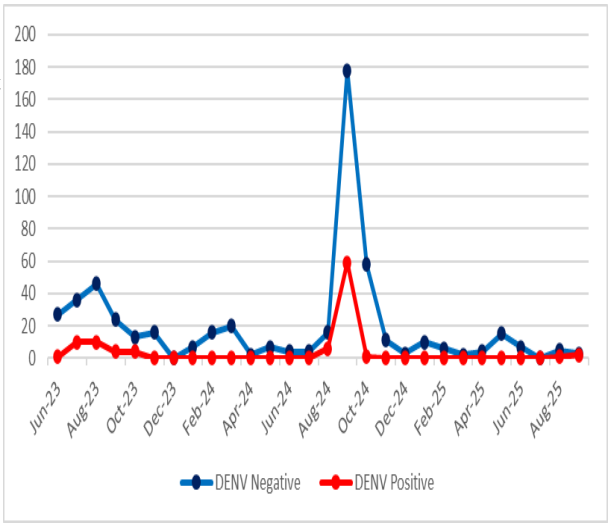
-NIH R01-AI155959-04 , "Sample-to-Answer, Rapid, Multiplexed and PCR-Free Diagnostics of Arboviral Diseases in Resource Limited Settings", PI-Ali Yanik

-Small Research Grant Initiative from the Office of Research

- Collaboration with Grenada Ministry of Health

Figures and Photos: Photo 1: Community site visit

Figure 2: Results of RT-PCR testing of AFI serum samples



Result	N (%)
Dengue virus	98 (15)
Chikungunya virus	1 (0.16)
Zika virus	0 (0)
Negative	535 (84)
Indeterminate	4 (0.63)
Total	**638 (100)**

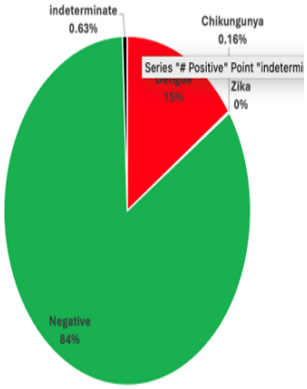
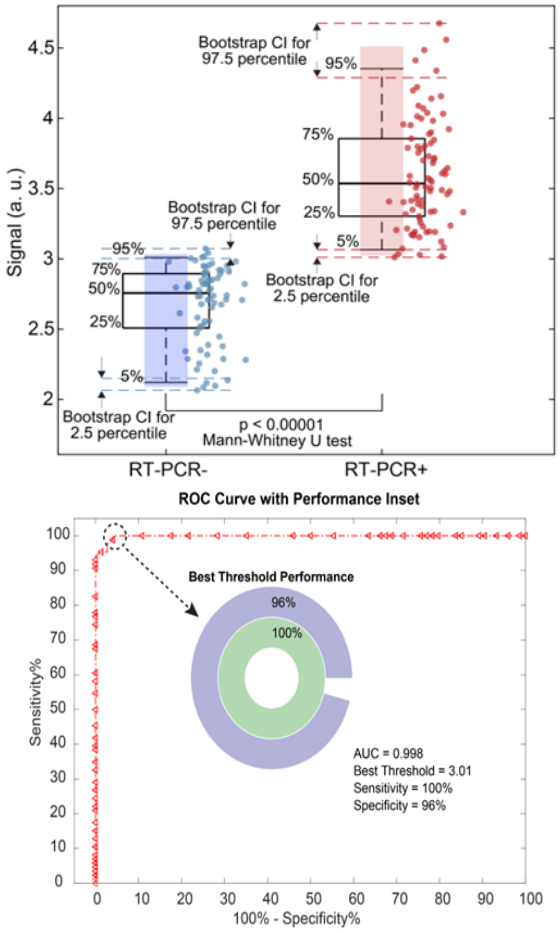


Figure 3: Multivariate Analysis of Epidemiologic Risk Factors for DENV Infection

Figure 2: Performance of novel dengue antigen detection system compared to RT-PCR.

Variable	aOR
Clinic type	Home (ref) Health center 1.06 (0.31-3.66) Private– 0.87 (0.32-0.2.34) University Clinic – 2.08 (0.33-12.75)
St George Parish	1.92 (0.78-4.73)
Male Sex	0.67 (0.31-1.49)
Afro-Caribbean race	**0.30 (0.12-74)**
Higher education	**0.36 (0.14-0.94)**
Apartment (vs house)	**3.95 (1.63-9.57)**
Concrete housing	1.07 (0.28-4.05)
Wood housing	0.96 (0.36-2.55)
AC	0.96(0.322-2.88)
Window Screens	1.09 (0.40-3.00)
Travel	2.42 (0.0.99-5.92)
Occupation (Student)	0.467(0.10 -2.12)



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A One Health Pilot Study to Estimate Hantavirus Disease Burden and Ecology Grenada

Background:

Emerging zoonotic viral infections continue to be an underappreciated source of undifferentiated febrile illness around the world, and the emergence of novel viruses or the spread of previously geographically restricted viruses to new locations pose the threats of epidemics and pandemics. "One Health" holds that human, animal, and environmental health are inextricably linked, and should be simultaneously studied and addressed to comprehensively improve human, veterinary, and planetary health. Given that most emerging viral diseases are zoonotic in nature, they are highly amenable to One Health approaches.

Hantaviruses represent a diverse family of viruses including several known human pathogens which are the etiologic causes of hemorrhagic fever with renal syndrome (HFRS) in Europe and Asia, and hantavirus cardio-pulmonary syndrome (HCPS) in the Americas. Human hantavirus infections are typically due to exposure to the excreta of infected rodent reservoirs, but recent emergence suggest shrews and bats may also be important reservoirs of hantaviruses. Despite the worldwide distribution of hantaviruses, very little information is available on their presence or contributions to human disease in the Caribbean. A limited number of studies have suggested high human and rodent seroprevalence in Barbados. Additionally, limited evidence suggests that rats in Grenada are seropositive for hantavirus infection, but no direct detection of virus has been performed. Therefore, we do not know which species of hantaviruses may be infecting humans or animals in Grenada. We hypothesize that hantaviruses may represent a significant but unidentified source of mild-moderate febrile illness. There is also concern for possible long-term sequelae given clear epidemiologic correlation between hantavirus exposure and chronic kidney disease in several studied populations.

Methods:

We are conducting a pilot study using One Health approaches to evaluate human and animal exposures to hantaviruses. We are currently testing serum of 400 participants recruited for our acute febrile illness cohort for anti-hantavirus antibodies to estimate the seroprevalence of human hantavirus infections in Grenada. We are then testing 400 samples which were negative for arbovirus infections using a pan-hantavirus nested RT-PCR to survey for active hantavirus infections. Any positive samples will be sequenced for species identification.

In parallel, we performed wild animal trapping and testing for hantavirus infections. In collaboration with Dr. Cheetham at St. George's University, we trapped bats, rats, and mice to test for evidence of hantavirus infection. We are testing collected serum for anti-hantavirus antibodies and viral RNA using ELISA and RT-PCR similar to human samples.

Results to date:

We anticipate completing all testing by the end of 2025. Currently, we have optimized pan-hantavirus RT -PCR protocols and have optimized human, rat, and bat ELISAs. Preliminary testing of 132 human samples by IgG ELISA indicates a 12% seroprevalence for hantaviruses in Grenada. These preliminary results suggest that hantaviruses are circulating and infecting people in Grenada undetected. As we continue testing, we will finalize seroprevalence estimates, attempt to detect active human and animal infections, and identify species responsible for infection. We predict that Seoul virus in rat reservoirs are present, but new-world hantaviruses may be present in mice and novel hantaviruses may be present in bats.

Funding and Acknowledgement:

-NIH R01-AI155959-04 , "Sample-to-Answer, Rapid, Multiplexed and PCR-Free Diagnostics of Arboviral Diseases in Resource Limited Settings", PI-Ali Yanik

-Stanford Center for Innovation in Global Health Seed Grant, PIs- Dr. Brian Dawes and Dr. Desiree LaBeaud

- Collaboration with Grenada Ministry of Health

Figures and Photos:

Photo 1: Bat Trapping – Dr. Brian Dawes, Dr. Sonia Cheetha, Quincy Augustine, Melissa Hosten

Photo 2: A captured *Artibeus lituratus* fruit bat

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The Sports for Health Program in Grenada

The Sports for Health Program in Grenada is a national health-promotion initiative designed to increase physical activity and improve health literacy across school and community populations. In 2025, the program reached 100% of public primary schools, 87% of secondary schools, and more than 1,000 community members. These achievements demonstrate strong growth in participation and measurable improvements in fitness and lifestyle indicators across the island. This report outlines the program's objectives, structure, activities, and outcomes, with particular emphasis on school and community data.

Grenada continues to face a rising burden of non-communicable diseases (NCDs), which account for more than 60% of premature mortality. Recognizing the essential role of physical activity in preventing and managing chronic diseases, the Sports for Health Program partners with the Ministries of Education, Sports, and Health, as well as St. George's University (SGU), to create sustainable opportunities for movement, recreation, and healthy living. The program's impressive reach across schools and communities highlights its status as a national public health asset and reinforces its alignment with One Health principles that integrate physical, mental, social, and environmental well-being.

In 2025, the program was active in all six parishes and engaged schools at multiple levels. School participation included all 56 public primary schools (100%) and 20 of 23 secondary schools (87%). A total of 340 students were regularly involved in weekly fitness activities, supported by 12 teachers trained in delivering structured physical activity sessions. Additionally, 16 SGU student volunteers contributed to school-based health and fitness events. Several key school-based outcomes were recorded. Through the Daily Movement Initiative, 92% of primary schools adopted 15-minute daily activity breaks designed to reduce sedentary time and improve students' physical readiness for learning. Fitness monitoring was implemented in 63% of schools, providing data on student BMI, endurance, and flexibility. Health literacy also advanced significantly, with 48 schools integrating nutrition and physical activity lessons into the Health and Family Life Education (HFLE) curriculum.

Community engagement remains the backbone of the Sports for Health movement. In 2025, community participation included 5 community sports clubs, 4 active parish-based walking and running groups, 219 regular adult participants, 50 senior fitness club members aged 65 and above, and 5 community coaches trained to support local activities. Community-level data revealed meaningful lifestyle improvements. Average weekly physical activity among adult participants increased from 60 to 120 minutes, reflecting a doubling of active time. Health screenings conducted across the parishes

reached 210 community members, with 31% found to have elevated blood pressure—a critical insight for public health planning and intervention.

Several parishes achieved notable milestones during the year. St. George recorded two new clubs and engaged 148 community participants, demonstrating strong urban involvement. St. Andrew formed one new club and reached 36 participants, while St. Patrick engaged 21 residents and St. John engaged 14. Carriacou and Petite Martinique, although forming no new clubs in 2025, recorded 219 participants across existing activities, underscoring the islands' active engagement despite their smaller population base.

The Sports for Health Program achieved several significant outcomes during the reporting period. National participation in structured physical activity increased by 29%, reflecting growing community interest and institutional support. Students engaging in daily movement showed measurable improvements in aerobic capacity and reductions in overweight and obesity rates in several schools. Parish-level sports initiatives created meaningful opportunities for social interaction, especially among older adults and youth, strengthening community cohesion. Youth involvement in village sports programs increased by 36%, contributing to improved behavioral outcomes and reduced risk behaviors.

Health education efforts expanded considerably, with school-based health messaging reaching approximately 12,000 students. Community health education also advanced, with SGU faculty and students increasing the number of health talks delivered from 18 in 2023 to 41 in 2024. SGU's involvement further supported structured data tracking and public health risk identification, enhancing the program's evaluation capacity. Importantly, program findings have now been incorporated into national NCD strategic planning meetings, positioning the Sports for Health Program as a core contributor to national health policy and prevention strategy.

In summary, the Sports for Health Program continues to make substantial, measurable contributions to health promotion and disease prevention across Grenada. Its multisectoral design, strong school engagement, expanding community participation, and growing data-driven approach make it a model for implementing sustainable physical activity initiatives in small island developing states.

Notable Parish Highlights

Parish	New Clubs Formed	Community Participants
St. George	2	148
St. Andrew	1	36
St. Patrick	1	21
St. John	1	14
Carriacou & Petite Marti-	0	219

Submitted by: Dr. Satesh Bidaisee , Dr. Trevor Noël & Dr. Calum Macpherson

CCCN- Conscious Discipline Coaching

2025 was a year of deepened learning, adaptation, and expansion for the CCCN Conscious Discipline Coaching Program. Building on the progress of previous years, the program continued to refine its coaching model, extend its reach into new settings, and strengthen international partnerships, particularly in the Caribbean and Kenya.

School Coaching – Grenada

Between January and July 2025, eight (8) Conscious Discipline coaches worked with twenty-nine (29) teachers across twenty-three (23) primary and pre-primary schools in Grenada. Coaches made weekly visits, collaborating directly with teachers in their classrooms.
From September to December 2025, seven (7) coaches continued in twenty-five (25) schools with twenty-seven (27) teachers, ensuring focused coaching support for a group of new teachers.

The teacher-centered coaching model remained at the core of our work, emphasizing individual teacher goals. Coaches assisted teachers in identifying the Conscious Discipline skills or powers most relevant to their classroom needs. Coaches modeled strategies, offered in-the-moment guidance, and held one-to-one reflective meetings to support implementation. Together, they set weekly goals for integrating new practices into daily routines.

1-2-1 goal setting meeting with teacher and Conscious Discipline coach.

For example:
- Teachers wanting to build stronger relationships with challenging students focused on the Power of Love and practiced connecting rituals.
- Teachers seeking to improve transitions and reduce chaos in the classroom concentrated on practicing routines and using visual and verbal cues to support predictability.

This approach continued to empower teachers to take ownership for their own learning and to embed Conscious Discipline practices deeply within their teaching.

Across all classrooms, teachers practiced **Composure**, using the **STAR breath** regularly to support self-regulation. This foundational skill enables consistent, teacher states: *"I can feel the difference in my classroom after implementing Conscious Discipline skills, it feels more peaceful, and I feel more in charge".*

As teachers strengthen their ability to remain calm, they become more able to notice and focus on children's positive behaviours, which encourages those behaviours to grow. This intentional focus helps build a stronger, more connected School Family where children feel valued, supported and connected to their peers.

A student supporting her friend through a difficult time.

Reflections on Whole-School Implementation

In July 2025, the program concluded its year-long whole-school implementation at St. Joseph's RC School, where all six teachers were coached. While the initiative demonstrated enthusiasm from the principal and some participants, it did not bring about the full school transformation anticipated. Variations in teacher engagement appeared to reduce the program's overall impact.
Whole-school implementation continues to be a goal of CCCN coaching but it must be driven by high motivation of all teachers and strong school leadership. Moving forward, the program will focus coaching on individual teachers who show strong interest and commitment, rather than attempting to coach entire schools simultaneously.

Expansion into Daycares

The introduction of Conscious Discipline coaching into daycare centers proved highly successful. Unlike full-school settings, daycare environments with multiple caregivers working in one room, offered natural opportunities for shared learning and peer support.
In September 2025, coaching was expanded to three (3) daycare centers, with coaches working directly

with one caregiver, whilst passing on Conscious Discipline skills to several caregivers through modelling within shared spaces.

Coaching in Carriacou

In September 2025, Conscious Discipline coaching began in Carriacou for the first time, led by coach Ms. Shashera Davis. This milestone marked the resumption of planned work that had been delayed by Hurricane Beryl in 2024.

Coaching in Carriacou has been especially impactful, supporting teachers and students in rebuilding emotional resilience and self-regulation following the trauma of the hurricane. Teachers have reported increased confidence in using Conscious Discipline strategies to create calm, connected classroom environments.

Roving Caregiver Program – Grenada

In 2025, community classes were paused, but the Roving Caregiver Program continued its vital home-based sessions with families.

The program received a European Commission grant to enhance the quality of Conscious Discipline coaching within family homes. With this funding, five (5) Roving Caregiver Coaches were hired to lead the Conscious Discipline intervention and work alongside Roving Caregivers, mirroring the model used in schools where coaches support teachers.

These coaches participated in a four-session intensive Conscious Discipline training course led by founder Dr. Becky Bailey, followed by ongoing weekly coaching sessions with Conscious Discipline Master Instructor Kim Jackson.

During July and September 2025, the Roving caregiver coaches facilitated two one-day intensive training sessions designed to empower the roving caregivers with an understanding of attachment and attunement, essential for nurturing relationships between caregivers and children. The trainings were held across four parishes: St. George, St. David, St. Andrew, and St. John. A total of 54 roving caregivers participated in these training sessions.

On October 13th 2025, the Roving Caregiver Coaches began fieldwork in various parishes throughout Grenada. Each coach was assigned five-six pairs of roving caregivers. The coaches accompany roving caregivers daily into family homes, modeling and coaching Conscious Discipline language with a focused emphasis on attachment and attunement.

Roving caregivers vising homes and encouraging parent-child connection.

To date, the Roving Caregiver Coaches have engaged with 54 roving caregivers, supporting 311 families and 339 children. This work centers on equipping roving caregivers with the skills and language of Conscious Discipline, enabling them to confidently support parents in fostering secure attachments with their children. Strengthening these foundational relationships encourages enhanced problem-solving, greater emotional resilience, and healthier connections within families, communities, and beyond.

Training

CCCN continued to build capacity across Grenada and the wider Caribbean through online training opportunities. The 10-session on line Conscious Discipline Foundation Course delivered in June 2025, provided practical strategies for eighty teachers, caregivers, and community leaders to create emotionally safe environments.

Kenya: Kisumu West

Building on the progress of 2024, Conscious Discipline implementation in Kenya advanced significantly in 2025.

In March 2025, thirty-five (35) Community Health Practitioners (CHPs) from Kisumu West completed two weeks of in-person practical training following their online Foundation training sessions in late 2024. This training strengthened their ability to model, teach, and coach Conscious Discipline principles within their communities.

By June 2025, the trained CHPs began facilitating community classes, reaching five hundred and eighty-three (583) caregivers and their children. Early results demonstrate strong engagement and growing community interest, marking an important step in expanding Conscious Discipline's impact in East Africa.

Community classes in Kisumu West

Annual Conscious Discipline Conference – United States

In July 2025, six (6) Conscious Discipline school coaches from Grenada served as helpers at CD1 conferences — three (3) in Orlando, Florida, and three (3) in Asheville, North Carolina.

Serving as helpers allowed the coaches to deepen their understanding of Conscious Discipline methodologies,

support new participants, and gain hands-on experience alongside Conscious Discipline Certified and Master Instructors. The events provided valuable opportunities for professional growth, networking, and renewed inspiration.

Conclusion

2025 has been a year of continued learning, strategic adaptation, and meaningful expansion for the Conscious Discipline Coaching Program.
Looking ahead to 2026, the program will focus on strengthening coaching quality through continued training, targeted selection of highly motivated teachers, further integrating Conscious Discipline within early childhood and home-based programs, and deepening partnerships in Kenya while exploring new regional collaborations.

CCCN coaching remains committed to empowering teachers, caregivers, and families to build emotionally intelligent, connected communities — one relationship at a time.

Submitted by the CCCN Team

CCCN- Measurement and Evaluation Pillar

The CCCN Assessment Team is continuing its work to document vital classroom and teacher observations within schools engaged in the Conscious Discipline Intervention Programme. With support from the European Commission, the team has also expanded its role to include evaluation of the two key programs within the grant: the Roving Caregiver Programme and the Legal Aid Counseling Clinic's Man to Man initiative.

Conscious Discipline Intervention Programme

Data were collected from 22 teachers and their classrooms post-intervention for the 2024-2045 intervention cycle. Pre-intervention data have been collected on the 25 schools currently enrolled in the program for 2025-2026.

Classroom Environment Assessments

To measure the impact of the CD intervention, the assessment team continues to observe teachers and classroom environments using the Classroom Assessment Scoring System (CLASS). Assessors enter classrooms and conduct discreet observations on two occasions, once with the CD Coach present and once without. Pre-assessment CLASS data have already been collected from the 22 teachers and classrooms currently enrolled in the intervention program. Mid-term and post-intervention data collection are scheduled for the 2026 Hillary and Trinity school terms, respectively.

Teacher Assessments

The CD Coaching Model remains centered on supporting teachers' goals and classroom needs, with an emphasis on equipping them with Conscious Discipline skills that foster both personal and professional success. In line with this focus, the assessment team continues to collect data from teachers, examining factors such as demographics, psychological safety, personality, mental health, depression, and fidelity to the model; and their classrooms, where positive and negative climate, teacher sensitivity, and behaviour management are observed. These measures were selected to address gaps in existing research by exploring how teacher characteristics influence implementation, thereby informing efforts to scale the programme regionally and globally. The resulting data will also contribute to the development of a predictive model for the successful dissemination of Conscious Discipline in other cohorts. Teacher and classroom assessments will continue in the intervention schools throughout the remainder of the 2025–2026 Academic Year.

European Commission Grant

Grant funding from the European Commission has allowed the CCCN to partner with the GRENCASE Roving Caregiver Programme and the Legal Aid Counseling Clinic's *Man to Man Programme to* adjust and assess a comprehensive, community-based intervention in Grenada designed to protect children's rights, reduce adverse childhood experiences (ACEs), and prevent gender-based and family-based violence. It uses a dual-prevention strategy: (1) empowering parents and caregivers of young children through training in child development, positive parenting, safety, co-regulation, and non-violent discipline; and (2) rehabilitating men who have committed intimate partner or family-based violence through structured psychoeducational counselling. The project also includes wide-scale community awareness campaigns to shift social norms around violence and child rights. Together, these components aim to break the intergenerational cycle of violence, improve child development and well-being, and strengthen community resilience.

Roving Caregiver Programme

The assessment team, in collaboration with CCCN Conscious Discipline Coaches and Roving Caregivers, has been actively recruiting, enrolling, and assessing families for this violence reduction study. The study utilizes the Conscious Discipline intervention, which seeks to decrease violence and violent behaviours by working directly with parents and their children under age three, equipping them with positive parenting practices and skills.

The assessment component of the study uses validated, previously implemented tools to measure changes in parenting practices, home environment quality, attitudes toward corporal punishment, and adverse childhood experiences (ACEs).

Despite some initial challenges in data collection, the assessment team has successfully learned to navigate the study terrain and has gathered pre-intervention data from 55 families currently enrolled in the Roving Caregiver (RC) Programme. The target number of assessments remains 150 families; however, with the December holidays approaching, the team will temporarily pause data collection until the RC Programme resumes in February 2026.

Legal Aid Counseling Clinic Man to Man Programme
For the Man to Man counselling programme, evaluation includes attendance and completion monitoring, participant feedback, and recidivism tracking through police and court records for up to 18 months. These data enable continuous quality improvement and determine the effectiveness of each component of the intervention.

The CCCN Assessment Team has reviewed the existing intake and exit forms for the Man to Man Programme and is now refining the surveys to more effectively capture data on men who complete the psychoeducational program and the impact it has on them. Data has already been collected from the cohort that recently finished their cycle of counseling, and this information will be used to evaluate the counseling's effects on participants. The resulting insights will guide adjustments to the forms and, where appropriate, to the counseling content itself, ensuring the programme becomes more effective and delivers positive outcomes for the men involved.

2025 Research Output

Publications

- Landon, B., & Waechter, R. (2025). Special issue: Decolonizing Caribbean Social Science: A User's Guide. Caribbean Journal of Psychology, 16(0), 1–105. https://www.uwipress.com/cjp-issues/v16-i2/

- Omurtag, A., Abdulbaki, S., Thesen, T., Waechter, R., Landon, B., Evans, R., Dlugos, D., Chari, G., LaBeaud, A. D., Hassan, Y. I., Fernandes, M., & Blackmon, K. (2025). Disruption of functional network development in children with prenatal Zika virus exposure revealed by resting-state EEG. *Scientific Reports, 15(6346).* https://doi.org/10.1038/s41598-025-90860-0

Conferences

One abstract was presented at the Institute on Violence, Trauma, and Abuse Summit in San Diego, California, August 2025.

- Landon, B., Evans, R., & Waechter, R. *Building Co-Regulation Capacity to Prevent ACEs & Mental Illness: A Neurodevelopmental Approach to Transform Caregiving in Low-Resource Settings.*

Two abstracts were presented at the Caribbean Region Conference of Psychology hosted by the Caribbean Alliance for National Psychological Associations (CANPA) in Barbados, June 2025.

- Murray, T., Evans, R., Isaac, R., Roberts, C., Noel, J., Mohammed, L., Waechter, R., & Landon, B. (2025). *Saving Brains Grenada: Building Resilience to Depression among Grenadian Teachers.*

- Waechter, R. & Landon, B. (2025). *Primary Prevention of Mental Illness from a Multi-generational and*

One oral presentation was given at the DES Education Summit at St. George's University, May 2025.

- LaQua D, Byam-Williams, C, Landon, B. *Conscious Discipline: Brain-Based Strategies for Building School Communities.*

One abstract was presented at the 69th Annual Caribbean Public Health Agency (CARPHA) Conference in Barbados, May 2025.

- Noel, J., Mohammed, L., Evans, R., Murray, T., Isaac, R., Roberts, C., Waechter, R., & Landon, B. (2025). *The Saving Brains Grenada Conscious Discipline Intervention Study: Self-regulation, Resilience, and Mental Health.*

Submitted by the CCCN Team

EACCN - Measurement and Evaluation Pillar

Over a two-week period in February 2025, a cohort of 24 research assistants successfully completed intensive training in caregiver assessments, the Global Scales for Early Development (GSED), and the use of the DHIS-2 and ODK digital data collection platforms. The training equipped the researchers with both technical and ethical competencies to ensure high-quality data collection throughout the study.
The caregiver assessment battery was comprehensive, covering multiple domains of family and child well-being. Instruments included the Adverse Childhood Experiences Scale (ACES), measures of domestic violence in the home, depression and anxiety screeners, food security and nutrition questions, the home observation for measurement of the environment (HOME), neuroception of psychological safety, psychological well-being, social support, self-regulation questionnaires, household status questions (including demographics, maternal and child health, and medical information), and water, sanitation, and hygiene (WASH) indicators.
To ensure cultural appropriateness and relevance, the assessment battery was carefully reviewed in collaboration between the trainer and research assistants. Items were discussed, refined, and, where necessary, removed or edited. Following this process, the instruments were translated from English into Luo and Kiswahili, then uploaded to DHIS-2 and ODK platforms for field implementation.
Data collection commenced in May 2025, with a target sample of 600 families in intervention areas and 600 families in control areas. The researchers worked closely with the Community Health Promoters (CHPs) in each area to locate families and complete their assessments. During data collection, researchers traveled in pairs with a CHP to each household. Children were assessed using the GSED while their primary caregiver simultaneously completed the caregiver assessment. Regular updates from the field were provided to the community-based assessment manager, who worked closely with the teams to troubleshoot and resolve any issues that arose in real time.
The dataset is currently undergoing cleaning and preparation for analysis, led by a student volunteer from the Johns Hopkins Global Health Established Field Placement program and a recently hired intern. This collaborative effort ensures both academic rigor and practical support for the project's analytic phase.
Families currently enrolled in the intervention program will complete the same assessment battery post-intervention in Spring 2026. This longitudinal design will allow for robust comparisons between baseline and follow-up data, providing critical insights into the effectiveness of the intervention and its impact on caregiver and child outcomes.

Submitted by the CCCN Team

Intersectoral Early Child Development Strategy Consultation Work for the Grenada Ministry of Education And UNICEF Eastern Caribbean Office

Calendar 2025 was a pivotal year for the UNICEF-funded *Intersectoral Early Child Development (ECD) Strategy* consulting project. This consultation, which launched on 8 April 2024 via agreement between the Grenada Ministry of Education and the Caribbean Center for Child Neurodevelopment at WINDREF, is now completed with the development and dissemination of the Intersectoral ECD Strategy document.

The Strategy aims to improve the development and well-being of the youngest citizens of Grenada, Carriacou, and Petite Martinique through comprehensive collaborative efforts among key stakeholders, including the government of Grenada, the Ministry of Education, UNICEF Eastern Caribbean Office, and the Caribbean Center for Child Neurodevelopment (CCCN) at the Windward Islands Research and Education Foundation (WINDREF), based at St. George's University. Policy makers, educators, health care workers, parents, and other community members were extensively consulted during the development of this strategy.

Based on the tri-island state of Grenada's existing services and programmes for children aged 0-8, and the potential to integrate and augment them efficiently so that all children can achieve their potential, the strategy addresses the current gaps in the ECD landscape and serves as a model for intersectoral cooperation and collaboration.

Over a 24-month period in 2024-25, the research team at CCCN reviewed Grenada's policies and services related to early childhood, producing a comprehensive desk review available at: https://cccnd.org/wp-content/uploads/2025/03/ECD-Desk-Review-Report-Jan-2025.pdf

Following its completion, the team conducted 55 interviews and 34 focus groups with n=273 key stakeholders (i.e., parents, educators, government officials, and field officers) enquiring about their perceptions of early childhood and Grenada's strengths and challenges in caring for its youngest citizens, especially those who are most vulnerable. To review existing policies and standards, CCCN also led eight consultations, one per parish, with parents and early childhood caregivers, and educators, to review current standards and policies and to gather input on how they can be improved. As the data emerged, CCCN also hosted two workshops for government and other key officials to solicit input on implementation and priorities. An analysis of strengths, weaknesses, opportunities, and threats (SWOT) from the desk review and fieldwork indicated the following themes, detailed in Section 4 of this document:

- Widespread consensus on the urgent need for formalized intersectoral mechanisms to avoid duplication and improve conditions for all young children.
- Pressing need for infrastructural modernization of schools and daycare facilities for academic support, climate-proofing and overall safety.
- Critical need for specialized training and workforce support.
- Structurally weak inclusion and a need for systemic, equitable inclusion for all children, particularly those most vulnerable.
- Marked discrepancies between policy intentions and on-the-ground implementation indicate the need for incentives and enforcement among care providers.
- Lack of a unified data system for monitoring progress across sectors.
- Untapped potential in leveraging community and cultural assets.
- Particular vulnerabilities in Grenada's sister islands, Carriacou and Petite Martinique. These vulnerabilities include severe shortages of trained teachers, therapists, and health professionals; inconsistent service delivery; and outdated or inadequate infrastructure. Threats to these islands also include climate vulnerability, logistical delays, and dependence on the mainland of Grenada for specialized support. These factors further the disparities in access and quality of early childhood services between the mainland and the sister islands.
- Poor adherence to and enforcement of nutritional policies, which, as this document will show, are needed for young children's healthy development.

The Intersectoral ECD Strategy is organised into and supported by nine sections including an introduction to ECD and its critical importance to a nation (Section 1); a coherent rationale for creating an intersectoral strategy for Grenada, Carriacou, and Petite Martinique (Section 2); best practices for an effective intersectoral, interministerial strategy (Section 3); a history of the project, project methodology, and results of two years' of data collection, analysis and cross-cutting priorities (Section 4); detailed recommendations (Section 5); careful descriptions for implementation of each recommendation (Section 6); a fully costed analysis of the strategy including return on investment (ROI) (Section 7); accountability structures for each aspect of the strategy (Section 8); and key governance requirements for such a strategy to be created (Section 9).

Currently, Grenada's children face overlapping challenges across poverty, protection, education, academic support, adequate facilities, child safety, nutrition, and health that no single sector can address alone. Over half of all Grenadian children live in poverty, the highest rate in the Eastern Caribbean, limiting access to the internet and essential learning materials (United Nations Children's Fund, 2024). Parenting programmes and community support exist but remain underfunded and fragmented, leaving many families, especially those with children with special needs, without adequate support.

Child protection systems are weakened by cultural acceptance of corporal punishment, inconsistent reporting, and insufficient family reunification services. Education services are expanding but constrained by declining proportions of trained teachers, inadequate staffing in preschools (Statistical Division, Planning & Development Unit, Ministry of Education, 2024), and limited capacity to include children with disabilities. Health services offer broad coverage, yet immunization rates have fallen, breastfeeding rates are low, and paediatric mental health services remain scarce. Nutrition programmes provide important support but face funding gaps, while diets high in sugar are contributing to early cases of overweight. These issues intersect: poverty undermines nutrition, weak protection systems affect learning, and fragmented services leave families navigating gaps alone.

To reverse these potentially damaging patterns, early intervention efforts must be prioritized through integrated intersectoral strategies. Adopting this holistic lens is essential to designing effective, responsive, and integrated systems that support the whole child. Fragmented and isolated responses are insufficient to address the complex, overlapping needs of young children and their families. Only through coordinated, cross-sectoral approaches can disparities be effectively reduced, outcomes improved, and the long-term returns on early investments realized for both individuals and society as a whole (Neuman & Powers, 2021; UNESCO, 2022; Britto et al., 2017).

The proposed Intersectoral ECD Strategy is urgently needed to align family support, protection, education, nutrition, and health into a coherent system. Such a strategy maximizes resources, reduces duplication, and ensures that every child in Grenada grows up safe, healthy, and ready to enter and excel in the formal education system.

Submitted by the CCCN Team

Preventing Intergenerational Violence and Strengthening Peacebuilding: A Gender-Responsive Empowerment Coaching Program for Fathers

Canadian Fund for Local Initiatives: CFLI-2025-BDGTN-GD-0002

The Caribbean Center for Child Neurodevelopment (CCCN) advanced a major gender-responsive initiative through grant funding of CAD $46,000 obtained from the Canada Fund for Local Initiatives (CFLI). The investment supported the launch of the Coaching4Dads Program, a pioneering effort aimed at preventing intergenerational violence and strengthening peacebuilding in Grenada by empowering fathers.

Funded under project number CFLI-2025-BDGTN-GD-0002, the initiative addresses a longstanding gap in psychosocial services for fathers by providing a culturally adapted, male and father-facilitated, trauma-informed coaching model designed to enhance emotional regulation, promote non-violent caregiving, and strengthen father-child relationships.

The program is grounded in a clear theory of change: when fathers build skills in emotional regulation, positive discipline, connected caregiving, and experience a sense of support and psychological safety, family conflict decreases, father-child bonding deepens, and long-term community peacebuilding improves. This gender-equality-focused design intentionally creates safe, male-led spaces where fathers can learn about the negative impact of adverse childhood experiences (ACEs), understand and explore trauma, practice non-violent discipline, and reduce risks associated with gender-based violence.

Research and Evaluation

The program integrates a mixed-methods pre- and post evaluation strategy using demographic data and a suite of standardized psychological and well-being tools, including:

- Adverse Childhood Experiences Scale (ACES)
- Protective and Compensatory Experiences Scale (PACES)
- Brief Self-Control Scale (BSCS)
- Attitudes Toward Corporal Punishment Scale 2 (ACP-2)
- Patient Health Questionnaire (PHQ-9)
- Neuroception of Psychological Safety Scale Generic Version (NPSS-G)
- World Health Organization Quality of Life Measure (WHO-QOL)
- Multidimensional Scale of Perceived Social Support (MSPSS)
- Parent Fidelity Competences

Program Delivery and Curriculum

An internal CCCN project team was assembled to oversee program delivery and meets weekly for project oversight. Coaching4Dads consists of 16 weekly, two-hour sessions delivered in community locations in St. David's and St. George's, across

a total of three fathering groups.
Delays in IRB ethical clearance affected the scheduled start date for the first group. During this period, the lead coach, Jerry Bascombe, identified prospective fathers and provided them with an overview of the 16-week program.

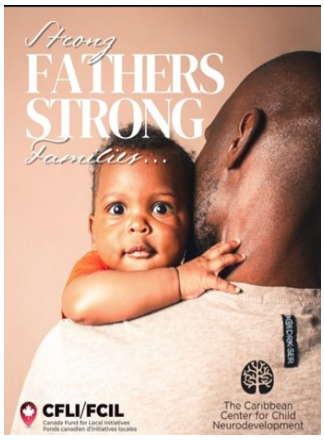
IRB ethical clearance was obtained on October 27th, 2025, and the first cohort of eleven fathers began sessions on November 2, 2025. Written and oral informed consent and media release statements have been secured for most participants, with the remaining pre-assessments scheduled for completion before calendar year-end.

Intrinsic motivation remains high despite occasional fluctuating attendance among the fathers. To build rapport and strengthen peer connection, the lead coach established a WhatsApp group for participants and facilitates weekly online discussions tailored to their needs and interests. Participants are highly engaged and have begun planning a customized group name, T-shirts and group cookouts.

There have been three sessions to date, and topics introduced so far include Conscious Discipline content such as Brain States and Composure. Sessions are also guided by the real-life fathering challenges identified by participants. Additional topics are expected to be covered by the end of the year, including 'I Love You Rituals.'

Advocacy and Communications

A robust advocacy and communications strategy was developed to accompany the program rollout, led by CCCN's social media manager, Irma Clark, and planned across a two-year timeline.



A comprehensive social media plan was finalized, an initial five-slide informational campaign was shared with CFLI, and a press release was distributed across the CCCN's social media and traditional media platforms across Grenada. A formal media launch took place on October 29 across CCCN's platforms. Social media presence on Grenadian outlets such as Mikey Hutchinson's, NOW Grenada and GBN took place between November 3rd and November 13th. Lead coach, Jerry Bascombe, supported the project launch by attending a radio interview hosted by WEE FM on November 14th.
The social media agenda for the first group includes 12 posts organized across three linear phases: the beginning, the shift, and the breakthroughs, to highlight milestones, learning moments, and participant experiences.

Project reporting

The first interim report was delivered to CFLI on October 31, 2025. The report provided an accounting of updates on project activities, outputs, results, impact, and lessons learned. It outlined the implementation process, challenges faced, and how challenges were addressed.

Operational Status and Risk Management

Financial, operational, and safety risks remain stable. IRB-related delays were resolved, and all deliverables are currently on track. The project continues to meet its planned 2025 targets.

Looking Ahead to 2026

In the coming year, two additional Coaching4Dads groups will be launched in St. George and St. David. Post-intervention data collection and analysis for the first cohort will begin in January, and quarterly advocacy outputs will continue, including video highlights and interviews. Final reporting will be delivered on September 1, 2027, and will include beneficiary statistics, engagement metrics, and recommendations for scaling and sustainability.

Submitted by the CCCN Team

The Caribbean Cancer Portal

Regional Stakeholders Meeting to Strengthen Cancer Policy Response in the OECS Countries

Healthcare practitioners, policymakers, and regional experts gathered on **Wednesday, October 8th,** for a **Scoping Meeting on Cancer Policy for the Caribbean**, marking a key step toward advancing a coordinated regional approach to cancer prevention and control in the region.

coordinated regional approach to cancer prevention and control in the region.

The meeting, convened by the **Caribbean Cancer Portal (CCP) in collaboration with government and non-governmental partner organizations in the OECS countries,** brought together representatives from the private health sector, Ministries of Health, civil society health organizations, academic institutions, and health authorities to review the current policy landscape and identify priorities for action.

Cancer remains one of the leading causes of death in the Caribbean, with rising incidence and mortality rates, driven by preventable factors such as tobacco use, unhealthy diets, alcohol consumption, physical inactivity, and environmental factors. Despite progress in areas such as screening and palliative care, significant gaps persist in policy implementation, access to treatment, and data for decision-making.

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During the session, participants discussed the need for:

- Strengthened national cancer control plans aligned with global and regional frameworks;
- Improved access to affordable cancer diagnostics and treatment services;
- Greater investment in cancer surveillance, research, and data systems; and
- Enhanced collaboration between governments, private healthcare facilities, and development partners to drive sustainable change.

"The scoping meeting is a crucial first step in developing a comprehensive Caribbean Cancer Policy Framework," said **Dr. Lindonne Telesford**, Co-Founder of the Caribbean Cancer Portal. **Dr. Horace Cox**, Director of Surveillance, Disease Prevention and Control Division at the **Caribbean Public Health Agency (CARPHA)**, emphasized the urgency of regional collaboration: "Cancer is the leading cause of death in the Caribbean and has a major impact on health and development of the region," he said. "There is an urgent need for strategic and intentional action; therefore, it is important that as a community we come together to think of how we can address the same."

Echoing this commitment, **Dr. Taraleen Malcolm**, Advisor for Noncommunicable Diseases and Mental Health at the **Pan American Health Organization (PAHO) for Barbados and the Eastern Caribbean Countries**, added, "On behalf of PAHO, I thank you for your dedication and partnership in advancing cancer prevention and control. I know together, through informed policies and sustained action, we can make a significant impact in strengthening cancer prevention and control programs in each and every one of our countries and member states."

Outcomes from the meeting will inform the development of a **Caribbean Cancer Policy Roadmap**, which will guide future action, advocacy, and partnerships aimed at reducing cancer-related morbidity and mortality in the region.

Submitted by Lindonne Telesford

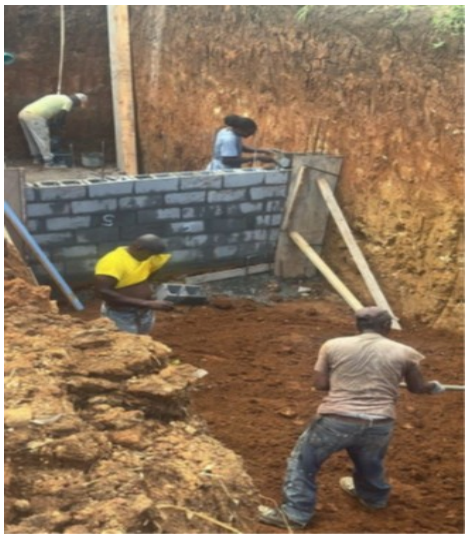
Wastewater Treatment and Recycling Project

This pilot recycling of wastewater project utilizes Activated Filtration Media (AFM) technology to transform wastewater from the Princess Alice Hospital in Maribeau to a standard for reuse in agriculture production. On 26 April 2024, a Memorandum of Understanding was signed between senior officials of Ministry of Health, Wellness and Religious Affairs, the National Water and Sewerage Authority, the Ministry of Agriculture, and WINDREF. The MOU affirmed the

full implementation and maintenance of the project through technical support and financial contributions. The first container of equipment, consisting of a three -phase septic tank, designed for efficient tertiary-level treatment of sewerage, arrived on the island in late December, 2024.

In February 2025, concrete works were completed in the grounds of the hospital for the installation of the aeration tanks and other equipment. Although this project experienced some delays attributed to *inter alia* the shortage of shipping containers following the pandemic, the majority of the work was completed in 2025 and should be commissioned in early 2026.

Concrete pad laid by NAWASA contractors for supporting the septic tanks which were imported from Edinburgh, Scottland .



Contractors installing a breeze block wall between the septic tank and the aeration tank

Aeration Tank installed on concrete pad

System almost fully set up in April, 2025

WINDREF expresses its gratitude to the Government of Grenada for its support of the project. Special thanks to: Mr. Terrance Smith for providing technical guidance, the Ministry of Health, the staff at the Princess Alice Hospital, NAWASA, Pure Water Wave

International, and the members of the Steering Committee for input to advance the project. We also thank the Caribbean Development Bank, NAWASA, and the Ministry of Health for their funding support to implement this program.

Submitted by Lindonne Telesford and Calum Macpherson

CREEi and the CREEi-Hastings Center Supplemental Programs

NIH-FIC Award # 3R25TW 009731-11S1

The Caribbean Research Ethics Education initiative (CREEi) hosted 25 graduates, faculty, and advisory board members for its Future of Caribbean Bioethics Conference in November 2025. The conference reflected the culmination of ten years of CREEi's regional research ethics education which, through two supplemental awards, provided additional professional development and opportunities for publication to 17 competitively selected graduates.

CREEi's Future of Caribbean Bioethics Conference featured and celebrated the work of its English-speaking graduates from multiple cohorts. It provided professional development with which all participants could advance their own mentoring and critical thinking skills. It also facilitated regional and international networking which catalyzed new relationships and partnerships among graduates and with one of our accomplished advisory board members, Shereen Cox of Jamaica.

The conference scheduled extensive time for plenary discourse and this facilitated the emergence of a shared vision for the future of Caribbean bioethics. This vision seeks to improve regional knowledge of and appreciation for research ethics, and to broaden Caribbean bioethics by adapting it to meet specific needs in the countries and institutions of CREEi graduates. Speakers and participants chose to examine ways that they could bring their CREEi-derived knowledge and skills to the region's developing needs for clinical and public health ethics, and to further integrate research ethics into non-traditional areas like the new master's degree program in Health Care Management at the University of Guyana. The need to think critically about using artificial intelligence in research ethics, healthcare, and wider realms was highlighted by two speakers and discussed along with the need to regulate its growing integration into all aspects of Caribbean life. Participants were enthusiastic for advancing research ethics and bioethics in their own work in 2026 and beyond was evident. Some participants offered to establish a WhatsApp community for regional research ethics and bioethics and, at the time of writing, are in the process of doing so.

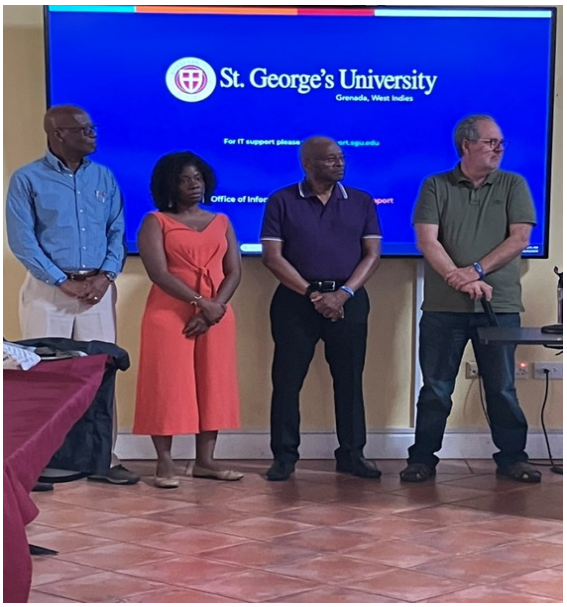
A formal evaluation of the CREEi program found that both English- and Spanish-speaking graduates valued the simultaneous dual language interactions required and facilitated by its master's in bioethics curriculum. While they reported enjoying interactions with classmates in the opposite language to their own, practical considerations dictated that CREEi's final onsite conferences would be conducted at the institutions where the program was delivered at UAQ in Mexico organized by Bernardo Garcia and graduate Veronica Cabeza for Spanish-speakers (November 2024), and SGU in Grenada organized by Cheryl Macpherson, graduate Kareem Coomansingh, and the WINDREF team for English-speakers (November 2025). If feasible, plans for a final conference online with live interpretation in both languages in January 2026, just prior to the grant closing out, will be held.

In 2025, CREEi worked to fulfill its commitments which include making publicly available access to educational materials developed

during the program. These include materials from its supplemental awards, the CREEi-Hasting Bioethics Scholars Program and CREEi-Hasting Climate Bioethics Program. Details of these can be found in CREEi's recent WINDREF annual reports. The WINDREF website will host these materials in English and Spanish languages through a webpage dedicated to CREEi's center of excellence in research ethics, the Center for Global Bioethics https://www.windref.gd/center-for-global-bioethics/. UAQ and its center of excellence in research ethics, the Unidad de Bioetica, will link to these materials in both languages. Materials include all course syllabi from the two-year master's in bioethics degree program and related assignments, instructions, readings, and grading rubrics. Additional resources from the Climate Bioethics Program, which built upon the foundation of the Bioethics Scholars Program, are being standardized to post in January 2026. Essays by students of both supplemental programs are available on The Hastings Center website as volumes 1 and 2 of Voices in Bioethics from the Caribbean Basin https://www.thehastingscenter.org/ as is the final webinar conducted February 13, 2025.

CREEi and its supplemental programs have educated nearly 100 fellows in research ethics and bioethics. Three related manuscripts involving faculty and graduates have been submitted for publication and five additional manuscripts are in preparation (including one in Spanish), with possibly others in development by other faculty and graduates. CREEi and its supplemental programs resulted from a collaboration between SGU, WINDREF, Clarkson University, Universidad Autónoma de Querétaro, and The Hastings Center. We are grateful to the NIH-Fogarty International Center for its support.

Photos below from the November 2025 Future of Caribbean Bioethics Conference



CREEi Future of Caribbean Bioethics Conference panelists from a session on the future of Caribbean bioethics from left to right: CREEi graduate Copeland Stupart, CREEi Advisory Board member Shereen Cox, CREEi faculty Derrick Aarons, and CREEi graduate, faculty, and Site-PI Bernardo Garcia

CREEi Future of Caribbean Bioethics Conference presentation by CREEi Alumni, Andrea Kanneh

Future of Caribbean Bioethics Conference attendees from left to right: Co-I Paul Cummins, CREEi graduate Rosmond Adams, Co-I Carolyn Neuhaus, CREEi graduate Deborah Stjinberg.

CREEi Conference at partner institution UAQ for Spanish-speakers in November 2024 (hybrid online and onsite).

CREEi Future of Caribbean Bioethics Conference participants during online presentation by Sean Philpott-Jones who was CREEi's from initial PI 2014-2019.

CREEi graduate presentation during Conference at partner institution UAQ (hybrid online and onsite).

Submitted by Cheryl Macpherson

Global Water Partnership-Caribbean (GWP-C)

Global Water Partnership–Caribbean (GWP-C) 2025 Highlights: Strengthening Water Security & Climate Resilience

Throughout 2025, the Global Water Partnership–Caribbean (GWP-C) significantly advanced its mission to strengthen water security, climate resilience, and sustainable development across Caribbean Small Island Developing States (CSIDS). Through high-level regional engagement, strategic partnerships, and youth outreach, GWP-C reinforced its role as a regional enabler for Integrated Water Resources Management (IWRM).

Leadership & Institutional Strengthening

In May 2025, GWP-C appointed **Dr. Roxanne Graham-Victor as its new Regional Coordinator.** A Grenadian graduate of the World Maritime University, Sweden with a PhD in Maritime Affairs and expertise in source-to-sea water management and marine and water resource management, also bringing strong experience in climate change adaptation to support GWP-C's work in advancing Integrated Water Resources Management (IWRM) and regional collaboration.

Regional & Global Representation

GWP-C actively contributed to key regional and international platforms. The organization participated in the **3rd NDC Finance Investment Forum** in Grenada, engaging in discussions on innovative climate financing for critical sectors including water, energy, and infrastructure.

GWP-C was also represented at the **PISLM 4th High-Level Ministerial Meeting**, reaffirming its commitment to sustainable land and water governance and the Caribbean Drought Initiative.

On the global stage, **Dr. Roxanne Graham-Victor** moderated high-level sessions at **UN Climate Week 2 in Ethiopia**, sharing Caribbean experiences on climate adaptation financing and National Adaptation Plan (NAP) implementation.

Strategic Partnerships & MOUs

GWP-C formalized two major partnerships in 2025:

CARPHA & GWP-C MOU (September 2025): Focused on strengthening the link between water security and public health through standards development, water quality monitoring, research, training, and public awareness.

PISLM & GWP-C MOU (October 2025): Targeted integrated land and water management, drought and flood resilience, soil and water conservation, research, youth engagement, and the joint implementation of the Caribbean Drought Initiative.

Additionally, GWP-C congratulated PISLM on the signing of its **Host Country Agreement with Grenada**, reinforcing regional institutional cooperation.

Capacity Building & Technical Engagement

GWP-C supported regional utilities at the **8th Water Operators' Conference in St. Vincent and the Grenadines**, addressing non-revenue water, climate-risk management, IWRM awareness, operator certification, and innovative water technologies.

The organization also participated as an observer in **CariCOF and EWISACTs Meetings in St. Kitts and Nevis**, strengthening its contribution to early warning systems, climate services, and regional climate-informed planning .

Advancing SDG 6 & IWRM

In July 2025, GWP-C, in collaboration with **UNEP, G-CREWS, and the Government of Grenada**, hosted a **Regional SDG 6.5.1 Workshop**, bringing together high-level stakeholders from six CSIDS. The workshop focused on accelerating water investments, developing mini action plans, and transitioning from planning to implementation of IWRM.
Grenada's **Minister Kerryne James** delivered a compelling call for coordinated regional action to secure the Caribbean's water future.

Youth Engagement & Community Outreach

Through the **"Youth in Action for Climate Change Adaptation" Campaign**, GWP-C partnered with Grenada's NAP Unit to deliver interactive climate and water conservation education in schools and summer programmes, fostering early awareness and community-based resilience in the summer and fall of this

One Health Research Initiative

Wildlife immunotypes and their role in the emergence and transmission of zoonotic pathogens (OHRI 01-02-25)

Summary of the project:

The immune response is one of the most variable traits in a population. However, individuals often develop consistent immune responses, or immunotypes, over time. Our previous research in wild animals indicates that these immunotypes may explain susceptibility to and shedding of respiratory zoonotic pathogens. Yet, the development of immunotypes in wild animals and the potential shift between infectious and non-infectious types remain unclear. This project aims to investigate how immunotypes develop in wild animals and their impact on the emergence and transmission of respiratory zoonotic pathogens. We hypothesize that early-life environmental stress induces more infectious immunotypes that favors emergence and transmission of respiratory zoonotic pathogens. To test this hypothesis we will study South American fur seals, which are long-living mammals hosting significant zoonotic pathogens like highly pathogenic avian influenza (HPAI) and tuberculosis. Our established field research station in the Chilean Patagonia, monitoring the largest colony of South American fur seals in the Pacific Ocean, has allowed us to sample and track

these seals across two generations. With the help of this infrastructure, we will collect blood and nasal biopsies from newborn pups and their mothers during the first months of life to measure immune parameters, characterize respiratory microbiomes, and identify pathogens such as HPAI and tuberculosis. Concurrently, we will assess oceanographic conditions, prey availability, and behavior to link these factors to the development of infectious immunotypes. Wild animals host most of the pathogens with pandemic potential, therefore, knowing the drivers of the susceptibility and shedding of zoonotic pathogens in these species is crucial for global health.

Research goals:

Develop a mechanistic model to explain the development of more infectious immunotypes in wild animals and use this tool to predict the emergence and transmission of zoonotic respiratory pathogens (tuberculosis and Avian Influenza).

Progress to this date:

For this project we have accomplished the following goals related to research activities:

-Completed set up of the laboratory at SGU with immunohistochemistry and advance imaging capabilities

-Processed 114 samples of wild rats from Guafo Island for PCR to detect Leptospira infection

-Processed 340 samples from TB infected African buffalos with collaboration of SGU DVM students (Kingslea Magana and Sydney Stephens)

-Processed 312 blood samples from South American fur seals with contributions from SGU DVM students Sydney Stephens, Rosmery Solorzano and Hanna Brunner

- Processed 43 nasal biopsy samples with contributions from SGU DVM students Sydney Stephens, Rosmery Solorzano and Hanna Brunner and WINDREF graduate students Juntian Bu and Erick Gomez

-Standardized immunohistochemistry protocols to detect IgA in tissues of African buffalo and South American fur seals (work performed by PhD students Juntian Bu and Erick Gomez)

-Validated and ran in-house ELISA to measure hookworm-specific IgG levels in 136 South American fur seal plasma samples (work performed by PhD student Juntian Bu).

-Collaborated with the Geddes-McAlister Lab at the University of Guelph's Advanced Analysis Centre to complete mass-spectrometry-based proteomic analysis on South American fur seal plasma samples (work performed by PhD student Juntian Bu).

-Extracted DNA and RNA from 96 nasal biopsies from South American fur seals to perform 16S and RNAsep analyses for microbiome and virome analyses (work performed with postdoctoral researcher Dr Josefina Gutierrez)

-Aliquoted, processed and shipped 721 fur seal plasma samples to the Peter Doherty Institute, University of Melbourne to perform antibody testing for Influenza B and Influenza A viruses (collaboration with Dr Marios Koutsakos)

- Performed the logistic work to establish a research campsite at Guafo Island (Chilean Patagonia) to perform field experiments in South American fur seals between December 2025 and March 2026

-Installed a remote video monitoring system at Guafo Island to study social relationships in South American fur seal pups (and determine their role in respiratory disease)

-Initiated field sampling of South American fur seals at Guafo Island along with graduate students Rebeca Leo-Zoppi (University of Guelph) and Junitan Bu (SGU WINDREF) and Erick Gomez (SGU WINDREF). Completed captures of 20 adult females and their pups plus other 12 pups for a total of 52 animals captured and sampled in 10 days (projected for this field season n=125 animals with 3-4 recaptures each)

Manuscripts published

The following manuscripts were finalized or published thanks to data collected for this project:

Erick Mendez-Gomez, Luna Larrieta, Diego Perez-Vargas, Ayush Nair, Aranza Gomez-Camus, Antonia Angel, Ricardo Chihuailaf, Claudio Verdugo, **Mauricio Seguel***. Neonatal metabolic and Immunological States Drive Eosinophil infiltration in South American Fur Seal Pups. Submitted to *Ecological and Evolutionary Physiology*

Arakawa N, Montalva F, Perez-Venegas D, Gutierrez J, Yamato O, **Seguel M***. Bonding's trade-off: oxytocin enhances helminth clearance but increases respiratory disease risk in a social marine mammal. Submitted for

publication to *Royal Society Open Science*

Seguel M*, Munoz F, Arakawa N, Paves H, Balaji S, Maboni G, Muller A, Gottdenker N. 2026. Intervention of island ecosystems promotes inflammation and zoonotic pathogens in invasive rats. *Science of the Total Environment.* https://doi.org/10.1016/j.scitotenv.2025.181089

Research Abstracts Presentations

The following abstracts were presented at international meetings by graduate students:

- Erick Gomez. Neonatal metabolic and Immunological States Drive Eosinophil infiltration in South American Fur Seal Pups. 7th Biennial WDA -LA Conference (September 2025, Brazil)
- Juntian Bu. Comparative analysis of hookworm-specific IgG and antimicrobial peptides (AMPs) in the health and survival of South American fur seal pups. Annual International Wildlife Disease Association Conference (2025, Victoria, Canada).

Submitted by Mauricio Seguel

Grenada FAD Deployment

Construction and Deployment of Fish Aggregating Devices (FADs)

Consultancy Overview

The Windward Islands Research and Educational Foundation (WINDREF) has received a consultancy through the WORLD BANK from the Government of Grenada via the Ministry of Mobilisation, Implementation and Transformation. The key components of this consultancy are for WINDREF to execute the following tasks:

- A bathymetric site survey at ten (10) designated FAD deployment sites
- Develop and finalize technical specifications of each FAD to be deployed at each site.
- Fabricate and deploy ten (10) FADs within the seven (7) fishing Districts.
- Train 20 fishers in each of seven (7) fishing districts to fabricate and fish around FADs
- Train 20 fishers in each of seven (7) fishing districts in Safety at Sea
- Install 5 marine repeater systems to support the Grenada Fisheries Sector.

This report outlines the FAD Deployment Mission of the 10 FADs which constitutes one of the deliverables of this consultancy.

FAD Design

After careful deliberations of the bathymetric maps and the materials available for the FAD construction, the WINDREF Technical Team including world renowned international FAD expert, Mr. William Sokimi in consultation with the Fisheries Division decided that the ten (10) FADs to be deployed under the consultancy would be the sub-surface FADs. The subsurface FADs shift the aggregation of fish below the ocean surface; thereby, mitigating many of the environmental and operational issues associated with traditional surface FADs. (Figure 1)

Sub-surface FADs differ from surface FADs in one critical respect, rather than floating at or near the ocean's surface, these devices are suspended below the water, typically at depths ranging from 30 to 300 ft, depending on regional requirements and target species. By resting beneath the direct influence of wind, waves, and passing vessels, subsurface FADs present a lower profile in the marine environment, creating unique advantages for ecological health and fishing operations.

Benefits of Sub-surface FADs

Sub-surface FADs are deployed at specific depths to attract particular species or life stages, such as adult tuna that prefer deeper waters. This reduces the likelihood of catching non-target or juvenile fish often found closer to the surface by aggregating target species below the surface. The selectivity of sub-surface FADs enables fisheries managers to design harvesting strategies that minimize bycatch and focus on sustainable yields, promoting responsible fishing practices. Subsurface FADs, by virtue of their position below the surface are less vulnerable to tampering, theft, or accidental damage by passing vessels; thereby, prolonging their operational life and minimizing maintenance costs. Additionally, they require fewer repairs and less frequent replacement, which results in lower operational expenses over the device's lifespan, making them a more cost-effective option.

GRENADA SUB-SURFACE FAD DESIGN

The following is a detail description of the three (3) main components (i.e., Head, Mainline & Anchor) of the Grenada Sub-surface FAD Design.

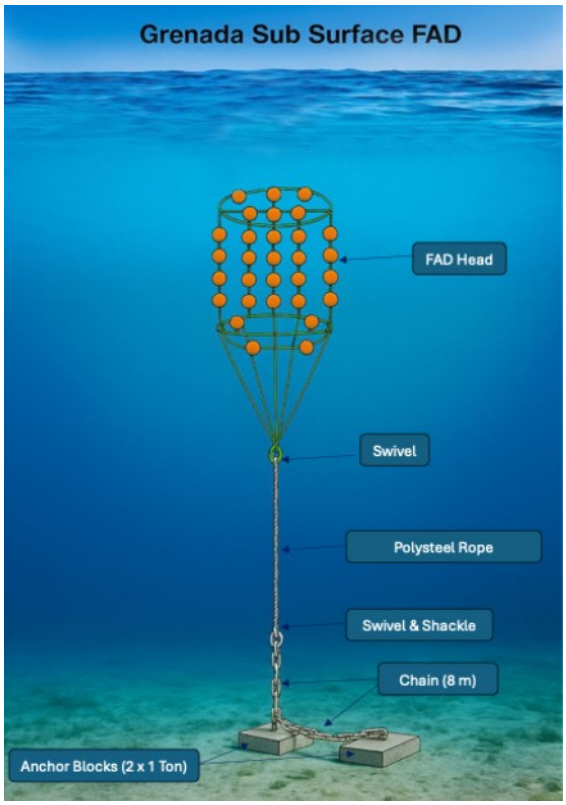


Figure 1: Schematic of the Grenada Sub-surface FAD Design

Vessels

Deployment Vessel

MV Piper a 90ft inter-island cargo vessel based on Carriacou was hired as the FAD Deployment Vessel (Figure 2). The role of the deployment vessel was to safely accommodate all the FAD Components (i.e., Anchors, Mainline, Head & Hi-flyer) as well as the equipment and crew required to deploy the devices. The vessel was hired with its forklift; however, it was fitted with a specially designed anchor launch table.

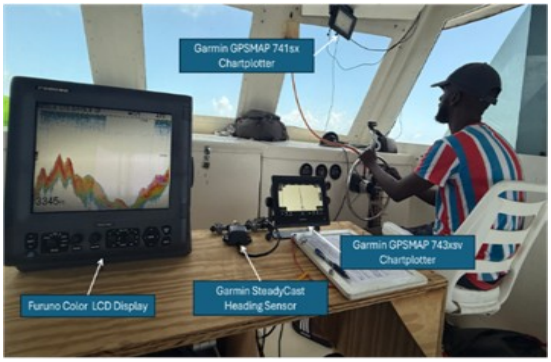
Figure 2: M/V Piper used as the Deployment Vessel for the FAD Deployment Mission

Pilot Vessel

The Grenada Fisheries Division 40ft Catamaran was utilized as the pilot vessel for the deployment of the FADs (Figure 3). The role of the pilot vessel was to guide the deployment vessel to ensure that the FADs were deployed as close to the predetermined deployment locations and depths as possible. In order accomplish this, the pilot vessel was equipped with navigation and bathymetric survey equipment (Figure 4).

Figure 3: Fisheries Division Catamaran used as the Pilot Vessel for the FAD Deployment

Figure 4: Navigation and Bathymetric Survey Equipment used on the Pilot Vessel for the FAD Deployment



Pre-deployment Preparation

Inspection & Final Checks

On October 6th and 7th, Mr. William Sokimi supervised the final inspection of the various FAD components that were constructed by the participants of the FAD Training workshops in each of the fishing districts, and stored at the FAD staging area at the Grenada National Cricket Stadium. The final inspections ensured that all components were accounted for and that they met all the design specification of each FAD. During this phase, all the Hi-flyers were branded with project logos as well as an

identifier (i.e., “Grenada FAD”) noting that the device was a FAD (Figure 5).

An experimental shallow water FAD was also constructed during this time using combination rope (i.e., fabric coated steel cable) and installed off the community of Gouyave (Figure 5). The experimental FAD was designed to examine the functionality of the combination rope as the mainline on a FAD within the Grenadian environment. The primary benefits of the use of combination rope in the construction of FADs are its strength and durability as well as its anti-vandalism properties.

Figure 5: The Hi-flyer of each FAD was branded with project logos and Device Identity (i.e., "Grenada FAD")

Figure 6: Mr. Sokimi teaching the member of the FAD Deployment team to splice combination rope

On October 8th, the specially design FAD Anchor launch table was installed onto the deck of MV Piper. The launch table (Figure 7) was custom designed to fit the hull of MV Piper and fabricated out of galvanize steel to accommodate the two 1-ton concrete anchors blocks. The launch table allowed for the two anchor blocks to be staged on the table by forklift and chained together ahead of arriving at the deployment location and be safely deployed as a single unit.

Figure 7: FAD Anchor Launch Table installed on MV Piper prior to deployment mission.

Figure 8: William Sokimi presenting to the deployment team during the pre-deployment Briefing.

Loading Deployment Vessel

On October 8th and 9th, 2025, all the FAD components (i.e., mainlines, anchors, Head, Hi-flyer) were transported by crane truck from the storage (i.e., anchors in Woodlands) (Figure 9) and staging site (i.e., National Cricket Stadium) to the CARICOM Jetty at Port St. George, then onto the deployment vessel (i.e., MV Piper) (Figure 10).

Figure 9: Crane truck being loaded with bins of FAD Mainlines for transport to the Deployment Vessel.

Figure 10: FAD Heads being offloaded from crane truck onto the Deployment Vessel.

Deployment Mission

The Grenada FAD Deployment Mission was conducted over three (3) days (i.e., October 10th – 12th, 2025) (See Figure 11).

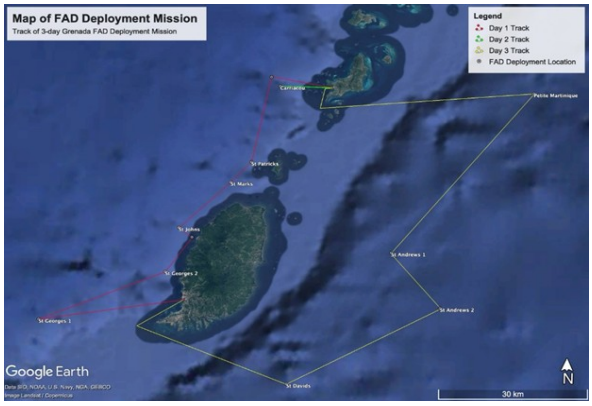


Figure 11: Map of the Grenada FAD Deployment Mission.

FAD Deployment Procedure

Deployment Vessel Activities

Once the deployment vessel was within 1.5 nm from the predetermined deployment location, the vessel slowed to five (5) knots, which is a speed that is slow enough to maintain vessel steerage and allow for safe handling of lines. The following are the steps that were taken on the deck of the deployment Vessel for the deployment of the FAD:

- The mainline stored in multiple bins were spliced together making one continuous length of rope.
- The two 1-ton anchor blocks were placed on the deployment table using the vessel's forklift and attached together using chain and shackles.
- The chain from the anchor blocks was then attached to the bottom end of the mainline using a shackle.
- The top of the mainline was the attached to the bridle of the FAD Head using a clove hitch knot and splice.
- The hi-flyer was the attached to the top of the FAD Head with ~ 200ft of nylon pilot-line.
- Once the vessel gets to within 1 nm of the deployment location, the crew started shooting the mainline rope into the water while ensuring that the FAD Head and Anchor blocks remain secure onboard as the vessel continues to navigate to the deployment location.
- Once all the mainline is safely in the water, the vessel will navigate directly to the position indicted by the pilot vessel.
- Upon arrival to the deployment location, the anchor blocks were released by tipping the deployment table with the forklift.
- The vessel is then stopped and the FAD Head placed in the water while keeping it still attached to the deployment vessel.
- The FAD Head is kept attached to the vessel until all the floating rope submerges and the weight of the Anchor is observed as starting to pull on the FAD Head. At this point the head is released along with the Hi-flyer.

Pilot Vessel Activities

The pilot vessel navigated directly to the predetermine deployment location ahead of the deployment vessel and verified that the water depth is exactly as was expected. This is required as minor variation in GPS accuracy may result in significant variation in water depth.

- The pilot vessel guided the deployment vessel to the spot for FAD deployment by positioning itself as close to the spot as possible allowing the deployment vessel to use the pilot as a navigation target. The pilot vessel would then signal the deployment vessel to drop the FAD anchor via the VHF Radio.
- In the instances where the water depth varied greater than fifteen feet (i.e., > ± 15ft), the pilot vessel looked for an area in close proximity that was the desired depth and guided the deployment vessel to the location.
- Once the deployment vessel released the entire FAD including the Hi-flyer, and the entire device had settled (i.e., stopped moving) in the water, the Pilot vessel retrieved the Hi-flyer and removed all

the excess pilot rope that attached the Hi-flyer to the FAD Head.

- The GPS position of the FAD Deployment Position was taken, and the FAD Deployment process was completed.
- The pilot vessel would then navigate directly to the next FAD in the deployment sequence, with the deployment vessel following.

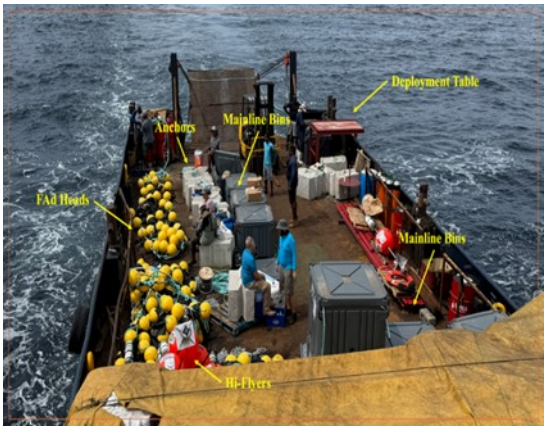


Figure 12: Deployment vessel leaving port with FAD Components and Deployment Team on deck

Figure 13: Part of the deployment team taking final instructions from W. Sokimi before starting the deployments.

Figure 14: Deployment Team loading the 2 1-ton anchor blocks on the launch table with the aid of a forklift.

Figure 15: Forklift in position below the launch table preparing to release the FAD anchor blocks into the ocean.

Figure 16: FAD Head and Hi-Flyer in position at the stern of the vessel for release into the ocean.

Figure 17: Deployment Vessel in the process of releasing the FAD.

Figure 21: The final orientation of the submerged FAD Head once it settled following deployment.

Figure 19: Team waiting for the FAD Head to submerge before releasing the Hi-flyer.

Figure 20: Members of the Deployment team onboard the deployment Vessel (MV Piper) during deployment

Table 1: List of Actual Grenada Sub-surface FAD Deployment Locations

FAD Name	Deployment Date	Location	
		Latitude	Longitude
St. George's 1 (SG 1)	October 10th, 2025	12°00'15.0" N	62°01'00.0" W *
St. George's 2 (SG 2)	October 10th, 2025	12° 06'11.3" N	61°47'15.3" W
St. John's (SJ)	October 10th, 2025	12°11'07.5" N	61°45'52.5" W
St. Mark's (SM)	October 10th, 2025	12°16'30.0" N	61°40'15.0" W
St. Patrick's (SP)	October 10th, 2025	12°18'52.5" N	61°38'00.0" W
Carriacou (CRU)	October 11th, 2025	12° 27'45.0" N	61°35'00.0" W
Petite Martinique (PM)	October 12th, 2025	12°29'15.8" N	61°06'54.4" W
St. Andrew's 1 (SA 1)	October 12th, 2025	12°08'35.4" N	61°22'26.8" W
St. Andrew's 2 (SA 2)	October 12th, 2025	12°02'19.9" N	61°16' 50.7" W
St. David's (SD)	October 12th, 2025	11°53'23.9" N	61°33'36.2" W
*Unconfirmed			

Debriefing

On October 13th, 2025, a formal debriefing session was held at WINDREF's Conference Room in True Blue, St. George's (Figure 22).

The debriefing session was attended by all members of the deployment team (including visitors from Jamacia & Fiji) along with key administrative staff of WINDREF. During the session, Dr. Trevor Paul Noël

provided an overview and history of WINDREF as an organization followed by a photo and video presentation by Mr. Roland Baldeo (Fisheries Expert) from the deployment mission.

Figure 22: Participants of the FAD Deployment Debriefing Session at WINDREF Headquarters.

Appendix 2: Journey Distance for FAD Deployment Mission

From	To	Distance (nm)	Mission Day	Outcome
Port St. George	St. George 1	19	1	FAD Deployed
St. George 1	St George 2	16	1	FAD Deployed
St. George 2	Barbar	7	1	FAD Deployed
Barbar	St. John	3	1	FAD Deployed
St. John	St. Mark	10	1	FAD Deployed
St. Mark	St. Patrick	3	1	FAD Deployed
St. Patrick	Carriacou	11	1	Unable to Deploy FAD
Carriacou	Tyrrel Bay Port	8	2	Returned to Port
Tyrell Bay Port	Carriacou	5	2	FAD Deployed
Carriacou	Tyrell Bay Port	5	3	Returned to Port
Tyrell Bay Port	Petite Martinique	30	3	FAD Deployed
Petite Martinique	St. Andrew 1	28	3	FAD Deployed
St Andrew 1	St. Andrew 2	10	3	FAD Deployed
St. Andrew 2	St. David	23	3	FAD Deployed
St. David	Port St. George	24	3	Returned to Port
Distance Travelled: Day 1 = 77 nm; Day 2 = 10 nm; Day 3 = 115 nm				

Acknowledgement

This FAD Deployment Report is an output of a consultancy entitled "Consultancy for the Construction and Deployment of FADs" (RFP No: GD-MOIID-483955-CS-CQS) implemented by The Windward Islands Research and Education Foundation (WINDREF) with funding provided through a loan from The World Bank to The Government of Grenada under the Unleashing the Blue Economy of the Caribbean (UBEC) Project. WINDREF would like to thank the technical staff of the Grenada Fisheries Division, the Captain and Crew of MV Piper and the Fishers and the four representatives representing each of the four schools at St. George's University (School of Medicine, School of Veterinary Medicine, School of Graduate Studies and School of Arts and Sciences) that participated in the deployment mission, your efforts were invaluable in the successful completion of this activity.

Submitted by: Trevor Paul Noël, Roland Baldeo, Olando Harvey, Nakita Francis

Propagules vs. Nursery Plants: Evaluating *Rhizophora mangle* Mangrove Restoration Strategies for Coastal Resilience in Small Island Nations

Mangroves are a group of salt-tolerant woody plants that thrive in the intertidal zone, serving as a critical buffer between land and sea. These plants provide essential ecosystem services, including coastal protection, serving as a biodiversity hotspot, and playing an important role in carbon sequestration (storing carbon at a rate up to 10x greater than other tropical forests). Additionally, they offer valuable benefits to local communities, supporting livelihoods and fisheries. Despite their importance, global mangrove coverage continues to decline with an estimated 20-35% already lost due to deforestation, coastal development and climate change. Understanding the importance of preserving and restoring these habitats plays a major role in protecting shorelines in island nations.

The goals of this study were to assess varying mangrove restoration approaches for maximum regrowth and shoreline stabilization with an additional goal of examining the invertebrate and vertebrate diversity within established mangroves and their recolonization following the reestablishment of new mangroves. The project had the following aims: 1) Compare the survival rates between nursery plants and propagules in the wild; 2) Compare the growth rate between nursery plants and propagules in the wild; 3)Compare the advantages and disadvantages of nursery production of mangrove plants; 4)To compare the species diversity within established mangroves and newly reestablished mangroves; 5) To examine the recolonization of species following the reestablishment of new mangroves.

For this study Rhizophora mangle (Red mangroves) were selected due to being the most resilient species overall with studies showing more success transplanting this species than others. Additionally, R. mangle is the dominant species within the Caribbean and widely distributed around Grenada. In April 2024 mangroves were planted from propagules in the Grenville Bay community nursery which are being utilized as part of this study (photo bottom left). In October 2024 an additional 20 R. mangle propagules were collected from the Woburn area (photo top left). A total of 16 nursery plants and 16 propagules were planted alternatively along Kirani James Boulevard in November. Each plant was tagged and coded appropriately. Biweekly data collection is ongoing, with monitoring of plant survival rates, missing individuals, height (measured from the ground to the tip of the shoot), leaf count, crown cover and salinity levels.

The first two months revealed that propagules initially grow faster than nursery plants. The tallest propagule in December 2024 measured 42.5 cm, while the tallest nursery plant stood at 57.4cm. By the end of December 2024, 6 propagules had been lost and 2 nursery plants. Crown cover ranged from 11-20.9cm for propagule and 0 – 28.5cm for nursery plants, providing further insights into growth patterns across both approaches.

This project's ultimate aim was to provide evidence-based data for restoration efforts targeting mangroves. If nursery development can be justified following the outcome of this study future studies such as redesign of nursery propagules conditions, examining the duration of propagule growth in the nursery and developing a replanting method will be considered and investigated.

By the end of December 2025, the group of mangroves that thrived were a mixture of propagule and nursery plant plants (photo right) measuring over 4 feet in height and been robust. The area selected for this study was a relatively high trafficked area and conclusive evidence for the best approach was difficult to establish long term. The most cost effective approach, however, was the use of propagules, and this approach is recommended for future mangrove restoration projects utilizing *R. mangle*.

R. mangle Propagule

Nursery Plant – October 2024

Mangroves December 2025

Submitted by Kiera McPherson, Kendon James, Steven Nimrod and Cal Macpherson

Enhancing Reef Restoration within the Grenville Bay (ERG) through the integration of community knowledge and leadership

Project Overview:

The Enhancing Reef Restoration within the Grenville Bay (ERG) through the integration of community knowledge and leadership project was implemented by the Windward Islands Research and Education Foundation (WINDREF) in Soubise, St. Andrew, Grenada, from April 2024 to July 2025. A community-led coral reef restoration project in Soubise, St. Andrew, funded by the Global Environment Facility (GEF) through the United Nations Development Program, in the amount of 50,000 USD. The project aimed to restore degraded coral reef habitats within Grenville Bay while strengthening community leadership, local capacity, and stewardship in reef conservation. Key activities included the expansion and maintenance of an in-situ coral nursery, the out-planting of over 800 coral fragments using micro-fragmentation techniques, water quality and temperature monitoring, and AGRRA-based training in coral reef monitoring for community members.

By combining science-based restoration methods with community engagement and capacity building, the project improved approximately four hectares of marine habitat, enhanced reef resilience to climate stressors, and supported sustainable livelihoods and long-term community-led reef management in Grenville Bay.

Key Activities and Outputs Performed Under this Agreement:

- Collection of coral fragments of opportunity and continued application of micro- fragmentation techniques to enhance coral growth and survival.

- Expansion, stocking, and routine maintenance of the in-situ coral nursery, with approximately 1540 coral fragments maintained during this reporting period.
- Out-planting of 826 coral fragments onto degraded sections of the Soubise fringing reef.
- Deployment of two in-situ water temperature loggers to support climate-responsive reef management.
- Water quality assessments at eight strategic locations across Grenville Bay, conducted in collaboration with the Grenada Bureau of Standards.
- Delivery of AGRRA-based training in coral reef monitoring, along with beach profiling and water quality monitoring to 17 community members, exceeding the project target.
- Ongoing maintenance of coral nursery and out-planting sites to ensure coral health and structural stability.
- Execution of community engagement and outreach activities in Soubise and Telescope, promoting reef awareness and stewardship.

Figure 1: Facilitation of the Atlantic Gulf Rapid Reef Assessment (AGRRA) Training for members of the Soubise community by Mr. Olando Harvey (TNC) in December 2024.

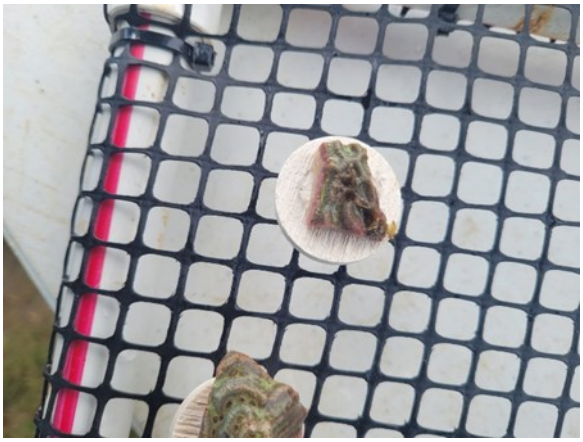


Figure 2: Micro-fragmented coral placed on a ceramic plug, ready to be facilitated in the underwater coral nursery.

Results

Environmental Results

- Active restoration of degraded reef habitats through coral propagation and out-planting contributed to improved reef structure and biodiversity.
- Identification of thermally resilient coral species (*Pseudodiploria clivosa*), strengthening climate-adaptive restoration strategies.
- Continuous monitoring of water quality and temperature improved understanding of local stressors, supporting evidence-based management.
- Increased survival and recovery observed in over 80% of surveyed reef areas following the 2024 bleaching event.

Figure 3: Facilitation of the Beach Profiling Monitoring Training for members of the Soubise community by Mr. Andre Witzig (TNC) in September 2024.

Figure 4: Community outreach held at the coral nursery facility in Telescope, St. Andrew, where the coral nursery assistants took the lead with training members of the community on micro-fragmenting techniques and standard operating procedures in December 2024.

Socio-Economic Results

- 17 community members trained in standardized reef monitoring techniques, strengthening local scientific capacity.
- Increased participation of women in coral restoration and monitoring activities, supporting inclusive environmental governance.
- Strengthened community ownership of reef resources, contributing to long-term stewardship and sustainable livelihoods.
- Enhanced collaboration between community groups, national institutions, and regional partners.

Immediate benefits realized by participants and recipient communities include:

Acquisition of practical skills in coral restoration and environmental monitoring, increasing employability and volunteer engagement.

Improved awareness of the ecological and economic importance of coral reefs to fisheries, coastal protection, and tourism.

Direct involvement in hands-on restoration activities, fostering a sense of pride, ownership, and responsibility.

Access to scientific tools and training (e.g., AGRRA protocols, temperature loggers), empowering community-led decision-making.

Strengthened social cohesion through collaborative community activities centered on environmental stewardship.

The project has laid the foundation for sustained long-term benefits, including:

- Increased resilience of coral reef ecosystems to climate-induced stressors such as warming seas and bleaching events.
- Improved coastal protection through healthier reef structures, reducing erosion and storm surge impacts.
- Enhanced fish habitat and potential recovery of reef-associated fisheries, supporting food security.
- Establishment of a community-based reef restoration and monitoring model that can be scaled or replicated across Grenada and the wider Caribbean.
- Strengthened local capacity to participate in conservation-related employment, eco- tourism, and marine resource management.
- Long-term climate data collection supporting adaptive management and national reporting obligations.Establishment of a community-based reef restoration and monitoring model that can be scaled or replicated across Grenada and the wider Caribbean.
- Strengthened local capacity to participate in conservation-related employment, eco- tourism, and marine resource management.
- Long-term climate data collection supporting adaptive management and national reporting obligations.

Challenges and Opportunities:

Challenges

- Unpredictable weather and rough sea conditions disrupted scheduled in-water activities.
- Elevated sea surface temperatures increased bleaching risk, requiring adjustments to out-planting timelines.
- Persistent algal blooms and episodic sargassum influx reduced water clarity and dissolved oxygen levels.

Opportunities

- Identification of thermally resilient coral species presents opportunities to refine restoration strategies.
- Growing community interest, particularly from women, offers potential for expanded leadership and livelihood pathways.
- Strengthened partnerships with national agencies and regional experts enhance technical support and knowledge exchange.
- Climate monitoring infrastructure creates opportunities for long-term research and policy integration.

Actions taken to solve them**:**

- Adjusted restoration schedules to avoid peak thermal stress periods and reduce coral mortality.
- Prioritized nursery maintenance and monitoring during adverse weather to safeguard coral health.
- Integrated water quality and temperature data into decision-making to guide adaptive management.
- Strengthened coordination with national authorities to address water quality and nutrient runoff concerns.

Key lesson learned:

- Community-led restoration is more sustainable when participants are trained, empowered, and actively involved in decision-making.
- Species-specific responses to climate stress highlight the importance of adaptive, science-based restoration planning.
- Flexibility in implementation schedules is essential in climate-vulnerable coastal environments.
- Long-term environmental monitoring is critical for understanding trends and informing adaptive management.
- Inclusive participation, especially of women, strengthens project outcomes and social resilience.
- Regional collaboration enhances learning, innovation, and resilience in addressing shared climate challenges.

Innovative Nature-Based Solutions to Enhance Community Resilience in Grenada (ING Project)

Project Overview

The Innovative Nature-Based Solutions to Enhance Community Resilience in Grenada (ING) Adaptation Project was designed to strengthen the ecological, social, and economic resilience of the coastal community of Soubise using ecosystem-based adaptation (EbA) approaches. Implemented during the final phase of the project, this reporting period focused on deploying remaining grant resources to address community-identified priorities while reinforcing long-term climate adaptation outcomes.

The project integrated coral reef restoration, coastal greening, sustainable livelihoods, and community infrastructure improvements, responding directly to climate risks such as

coastal erosion, reef degradation, and livelihood vulnerability. By emphasizing community leadership, hands-on training, and practical nature-based interventions, the project contributed to enhanced adaptive capacity at both ecosystem and community levels.

Key Interventions and Outputs

During the reporting period, eight priority interventions were implemented:

- Coral reef restoration through micro-fragmentation and outplanting, led by trained local fishers.
- Installation of 12 permanent moorings in Soubise Bay, exceeding the original target of 10, reducing anchor damage and improving marine safety.
- Rehabilitation of the community plant nursery, including infrastructure repairs, replacement of damaged materials, and plant restocking.
- Targeted support to seamoss farmers, replacing equipment lost during Hurricane Beryl.
- Coastal and recreational space enhancement, including vegetation outplanting and installation of six public benches.
- Community training in vegetation outplanting and maintenance, combining theory and field application.
- Public awareness and outreach activities focused on coral reef conservation.

Results and Outcomes

Environmental Results

Expansion of coral restoration sites with measurable improvements in reef condition and biodiversity.

Reduced seabed disturbance due to replacement of informal anchoring systems with permanent moorings.

Enhanced coastal vegetation cover contributing to shoreline stability and ecosystem services.

Social Results

Increased community use of shared recreational spaces, supporting social cohesion and cultural activities.

Strengthened environmental stewardship through hands-on involvement in restoration and greening activities.

Improved community awareness of the role of reefs and ecosystems in climate resilience.

Livelihood Results

Continued engagement of fishers and seamoss farmers in climate-resilient livelihood activities.

Skills development enabling participants to sustain and expand restoration and nursery activities beyond the project.

Figure 1: Shoreline stabilization community engagement conducted in Soubise, St. Andrew during December 2023.

Figure 2: Facilitator, Mr. Imhotep, illustrating the process of effectively outplanting potted plants through the cutting of tangled roots.

Impact

- The ING Adaptation Project delivered tangible resilience benefits at multiple levels:
- Ecosystem resilience was enhanced through active coral restoration and reduced marine habitat damage.
- Community resilience was strengthened by improving shared spaces, supporting livelihoods, and increasing local adaptive capacity.

Figure 3: Shoreline stabilization community engagement conducted in Soubise, St. Andrew during December 2023.

Figure 4: Newly installed bench at the Soubise recreational area to enhance community resilience in the area.

Figure 5: Planting of drought-resistant and salt-tolerant plants within the Soubise recreational area.

- Institutional resilience was reinforced through partnerships with national agencies and regional conservation organizations.
- Collectively, these impacts demonstrate the effectiveness of flexible, community-driven nature-based solutions in addressing climate change at the local scale.

Challenges and Lessons Learned

Key Challenges

- Identifying planting locations that minimize disturbance from human activity.
- Delays due to material preparation and curing requirements.
- Lengthy government approval processes for marine infrastructure.
- Inability to install the biodigester system due to supply constraints and low community acceptance.

Lessons Learned

- Ecological design must integrate patterns of human use.
- Project timelines should account for material readiness and quality assurance.
- Early, high-level government engagement accelerates approvals.
- Community acceptance is as critical as technical feasibility for innovative technologies.

Knowledge Production and Capacity Building

- The project delivered targeted capacity-building interventions, including:
- Coral reef restoration training, covering micro-fragmentation, outplanting, and monitoring.
- Vegetation outplanting and maintenance training for nine community members (5 women, 4 men).

These activities strengthened local technical capacity, promoted knowledge transfer, and ensured community ownership of project outcomes.

Sustainability and Replicability

- Sustainability was embedded through:
- A train-the-trainer model for coral restoration.
- Provision of tools and equipment to community members.
- Strong local ownership of restored reefs, nurseries, and public spaces.

The project presents a replicable EbA model for other coastal communities in Grenada and the wider Caribbean, particularly where livelihoods, ecosystems, and climate risks intersect.

Monitoring, Evaluation, and Learning (MEL)

Monitoring focused on:

- Coral outplanting area and survival.
- Community participation and training outcomes.
- Use and condition of shared community infrastructure.

Progress toward MEL targets indicates positive trends across environmental and social indicators, validating the project's Theory of Change.

Telescope Living Shoreline (TLS) Project

Project Overview

The Telescope Living Shoreline (TLS) Project is a climate adaptation initiative designed to reduce coastal vulnerability and enhance ecosystem resilience along the Telescope shoreline in Grenada. The project applies ecosystem -based adaptation (EbA) principles to address increasing risks from coastal erosion, flooding, sea-level rise, and extreme weather events, while safeguarding nearby infrastructure and community assets.

During the first reporting period, project implementation focused on establishing the technical, social, and institutional foundations required for successful shoreline stabilization. Key efforts included baseline environmental assessments, demographic and infrastructure studies, consultant mobilization, nursery rehabilitation, and community engagement. These preparatory activities are essential to ensuring that subsequent shoreline interventions are technically sound, environmentally compliant and socially inclusive.

Key Activities and Outputs

During the reporting period, the project achieved the following core outputs:

- Completion of baseline water quality assessments within the Grenville Bay Area.
- Initiation of demographic and social assessments to inform inclusive shoreline design and community engagement strategies.
- Infrastructure valuation and condition assessments to identify assets vulnerable to flooding, erosion, and sea-level rise.
- Launch of the Environmental Impact Assessment (EIA) process, including approval of inception and scoping reports.
- Development and publication of procurement documents for shoreline stabilization under a design–build framework.
- Selection and evaluation of a design–build contractor for shoreline works.

–build contractor for shoreline works.

- Rehabilitation of the Telescope plant nursery in preparation for mangrove and coastal vegetation propagation.
- Implementation of community outreach activities, including a walk-through and consultation session with residents.
- Engagement of a communications consultant to document project progress and enhance public awareness.

Figure 1: Area highlighting the level of coastal erosion at Telescope, St. Andrew during low tide.

Figure 2: Plant nursery updates after necessary maintenance was conducted in February 2025.

Figure 3: Area highlighting the level of coastal erosion at Telescope, St. Andrew during a high tide event.

Results

Environmental Results

- Establishment of robust baseline environmental data, including water quality and beach profiling, to guide adaptive shoreline design.
- Improved readiness for future ecosystem restoration and stabilization works, including mangrove planting and living shoreline installation.
- Strengthened environmental safeguards through early initiation of the EIA and SMP.

Social Results

- Increased community awareness of coastal risks and planned adaptation measures.
- Strengthened community trust through transparent communication and early engagement.
- Integration of community perspectives into the shoreline design process.

Impact (Early-Stage)

- While the project has not yet reached its full implementation phase, early impacts are already evident:
- The project has laid the groundwork for long-term coastal protection of infrastructure, livelihoods, and ecosystems in Telescope.
- Foundational studies and assessments have significantly reduced technical and environmental risks associated with shoreline installation.
- Community engagement has improved local understanding of EbA approaches and the role of living shorelines in climate resilience.

These early impacts position the project for effective delivery of physical shoreline stabilization in subsequent phases.

Challenges and Lessons Learned

Key Challenges

- Delays in consultant onboarding and procurement processes.
- Limited availability of local expertise in specialized coastal engineering.
- Reduced competition during the shoreline contractor tendering process.
- Weather-related risks, highlighted by Hurricane Beryl and unseasonal extreme rainfall.

Lessons Learned

- Early investment in planning, assessments, and stakeholder engagement is critical for complex EbA projects.
- Flexible work planning is essential in climate-vulnerable coastal environments.
- There is a strong need for capacity building and knowledge transfer in coastal engineering and nature-based shoreline solutions.
- Early risk identification improves long-term project resilience and cost efficiency.

Knowledge Production and Capacity Building

The TLS Project contributed to knowledge generation through:

- Baseline environmental datasets (water quality, beach profiles).
- Demographic and infrastructure assessments to inform equitable adaptation planning.
- Technical documentation supporting EIA compliance and shoreline design.
- Community engagement activities that strengthened local understanding of climate risks and adaptation options.

These outputs form a critical evidence base for shoreline implementation and future replication.

Sustainability and Replicability

The project is designed to ensure sustainability by:

- Embedding community participation and ownership from the planning phase.
- Strengthening institutional coordination and technical capacity.
- Integrating ecological restoration (mangroves, coastal vegetation) with engineered shoreline solutions.

The TLS Project builds on lessons from previous initiatives (including the ING project) and offers a scalable model for living shoreline interventions in other vulnerable coastal communities in Grenada and the wider Caribbean.

Monitoring, Evaluation, and Learning (MEL)

Monitoring during this phase focused on:

- Baseline environmental indicators (water quality, beach profiles).
- Progress toward consultant deliverables and procurement milestones.
- Community engagement outcomes.

These monitoring efforts ensure that future shoreline works are evidence-based and adaptive.

Submitted by Telescope Living Shoreline Team

Reach Within

Reach Within (RW) is a registered charity in Grenada, Caribbean, and a project of the Windward Islands Research and Education Foundation (WINDREF). The organization's core mission is to empower young people to thrive. Through targeted intervention and prevention programs, RW equips vulnerable children and teens with the skills to build emotional resilience, cultivate healthy relationships, and develop the job and life competencies needed for long-term healing, stability, and growth.

Scope of Work

RW's scope of work spans residential care, community-based youth development, school-based prevention, and climate-related mental health support across Grenada. For more than 15 years, the organization's has part-

nered with the Child Protection Authority of Grenada (CPA) to deliver therapeutic programming for children, youth, and adults with special needs residing in the five residential care homes across the island. To date, Reach Within has positively impacted thousands of youth and stakeholders in their well-being.

As a community-based organization, RW also operates a youth drop-in center in the nation's capital, where at-risk young people access job and life skills training, mentoring, counselling, and a food and supply pantry that supports their holistic wellbeing. Building on this community-level support, RW is also expanding its reach into the education sector, working in partnership with the Ministry of Education to implement prevention and wellbeing programs in primary schools nationwide and strengthen early intervention systems for children.

Extending beyond school settings, and recognizing the broader environmental challenges affecting children's wellbeing, RW also supports climate-impacted communities. Given Grenada's location within a climate-vulnerable region, the organization continues to advance long-term recovery efforts in Petite Martinique and Carriacou following Hurricane Beryl, equipping community adults with the skills needed to guide and stabilize the young people in their care.

Figure 1: Picture displaying participants of the inaugural Lay Mental Health Training along with training facilitators Dr. Hazel Da Breo, Mr. Jerry Bascombe, and Dr. Trevor Noel of WINDREF.

Activity (1): Self-Regulation Sessions

Reach Within's signature, science-backed curriculum empowers young people to heal from trauma by teaching them to regulate their nervous systems. Through repetitive rhythmic activities and trauma-informed exercises, participants are guided out of default trauma-response patterns—fight, flight, freeze, or fawn—that can lead to maladaptive behaviours, and into a more regulated state. Once children and youth experience a sense of internal safety, they are better able to access the parts of the brain responsible for reasoning, processing emotions, and learning. Mr. Jerry Bascombe, Reach Within's primary Self-Regulation Teacher and Coach, leads a dedicated team of fellows, interns, and volunteers in delivering therapeutic activities such as drumming, dance, swimming, tapping, and other movement-based practices to children, teens and adults with special needs who have been removed from their typical home environment and placed in alternative care due to abuse, neglect or the need for specialized care. Grenada's five residential care homes include: Father Mallaghan's Home for Boys (FM), SMILES Home for Girls (SM), The Belair Home for Children and Adolescent Girls (BA), The Queen Elizabeth Home for Children (QEH), and the Dorothy Hopkin Home for the Disabled (DH). Each home receives bi-weekly sessions over a 52-week period. In 2025, Reach Within served 185 unique individuals.

Activity (1): Self-Regulation Sessions

Each home receives bi-weekly sessions over a 52 week period. In 2025, Reach Within served 185 unique individuals

Unique Individuals Served by Bi-	QEH	DH	FM	SM	BA
Male 0-18	19	14	15	N/A	6
Female 0-18	13	18	N/A	24	11
Adults (Staff /	17	14	15	16	14

Figure 2: Drumming session at Queen Elizabeth Home for Children with Program Coordinator Jerry Bascombe

Figure 3: Dance session at Queen Elizabeth Home for Children with facilitator Karina Samuel

Figure 4: Yoga session at Belair Home for Children and Adolescents with Program Coordinator Jerry Bascombe

Activity (2): Capacity Building for Child Protection Authority (CPA) and Community Adult Stakeholders

RW only partners with the Child Protection Authority (CPA) to support mental health equity for children and teens through therapeutic self-regulation sessions in residential care homes, and also **serves as a key professional development trainer for CPA staff and other adult stakeholders.** This year, Reach Within facilitated three professional development sessions at the Melville Street Fish Market Conference Room, engaging **85** adult participants, including Child Protection Officers, Residential Care Home Managers, Foster Care Parents, and Professional Caregivers. The sessions focused on strengthening core competencies in Attachment and Trauma-Informed Caregiving, Effective Communication and Psychological First Aid, and Developmental Trauma alongside Team Building and Leadership Skills. Participants reported meaningful personal and professional growth, with one caregiver noting, "I found closure in understanding that I am a base, so when they are flocking me or interrupting me constantly when I am trying to complete a task, I need to practice greater tolerance with the children." Further qualitative analysis conducted by University of Denver intern *Shivani Naraharishetty* revealed consistent confidence in conceptual understanding and theoretical knowledge. However, it also highlighted the need for greater assurance in the practical application of these concepts. In response, RW has invited all attendees to also participate in quarterly retreats to strengthen applied skills and bridge the gap between theory and practice.

Figure 5: Training #1 on Attachment and Trauma-Informed Caregiving on 20th March, 2025; 34 participants. Facilitated by Donnet Williams, RW General Manager

Figure 6: Caregiver Training #2 on Effective Communication and Psychological First Aid & Developmental Trauma on 26th June, 2025; 19 participants. Facilitated by Ms. Donnet Williams, RW General Manager & Ms. Shivani Naraharishetty, University of Denver Summer 2025 Intern

Figure 7: Training #3 - Team Building and Leadership Skills on 25th September, 2025; 32 participants. Facilitated by Ms. Anicka Phillip, RW Youth Mentor

RW's quarterly **Caregiver Retreats** are typically held outdoors in natural settings qne emphasize hands-on learning through engaging activities such as games, role -playing, and group discussions. They also incorporate self-care practices, nourishing meals, and opportunities to unwind, reset, and rejuvenate while connecting with professional peers. The retreats are designed to support caregiver well-being not only in theory but through lived experience, modeling care and ensuring that those who nurture others feel well-resourced and supported. This year's sessions focused on three key themes:

- **Positive Energy through Rhythm**
- **Effective Communication & Active Listening**
- **Team Building & Leadership Skills**

To date, **RW** has facilitated three full day retreats, engaging a total of **47** participants. Attendees included Residential Care Home Managers, Foster Care Parents, and Professional Caregivers. Data from participant surveys demonstrates that the retreats not only enhanced caregivers' confidence in applying trauma-informed care practices but also improved their sense of personal well-being, resilience, and connection to a supportive professional community

Figure 8: Retreat 1 held at Mt. Camel Falls, St. Andrew on Saturday 8th March, 2025 under the theme Positive Energy through Rhythm; 17 caregivers, 5 staff

Figure 9: Retreat 2 held at Adelphi Waterfalls, St. Andrew on Saturday 31st May, 2025 under the theme Effective Communication and Active Listening; 16 caregivers, 4 staff

Figure 10 : Retreat 3 held at Magazine Beach, St. George on Saturday 19th July, 2025 under the theme Team Building & Leadership Skills; 19th July:14 caregivers, 4 staff

Activity (3): Transitional Living Program

Young people leaving residential care or foster care at age 18 often step into adulthood alone, carrying the effects of trauma and without a clear plan for housing, work, or stability. The **Reach Within Transitional Living Program (TLP)** offers a lifeline, supporting youth aging out of care and other at-risk young people through counselling, mentoring, life skills training, and access to basic necessities. This year, our drop-in centre in St. George's supported up to **60** youth and hosted **10** life skills workshops focused on emotional regulation, healthy choices, financial literacy, and job readiness. This year, Reach Within launched its *Stories of Impact* series to highlight the powerful moments when the Transitional Living Program becomes a safety net for young people in the community.

A young man walks in with nothing but bread and determination

One afternoon, a young man stepped into the Drop-In Centre just hours after being released from prison. He knew about the Drop-In Centre as TLp provides outreach to the prisoners. He carried only the clothes on his back and a few loaves of "prison bread"—bread he had baked while incarcerated and hoped to give to his mother. He asked for $4.00, just enough to take a bus home to St. David. But what he really sought was a chance to start again. Since that day, he has returned regularly, to engage in job and life skills training programs. With the Drop-in Centre counselors, he has shared his desire for employment and his efforts to stay on a positive

path and rebuild his life. While waiting for job opportunities, he has began selling fruits from his family yard as a way of staying productive and hopeful.

From job seeker to certified scuba diver

Another young man came to Reach Within seeking a small but meaningful form of support: a travel stipend so he could get to work during his first month of employment. He had just secured a job in the dive department of a hotel in the south of the island. Reach Within provided the stipend along with some mentoring around professional etiquette and financial planning. Months later, he reached out again, not for help, but to share his progress. He had become a certified scuba diver and was now training to become a dive master. His message was simple but powerful: His message was simple but powerful: with a little support at the right moment, he had been able to transform a job into a career.

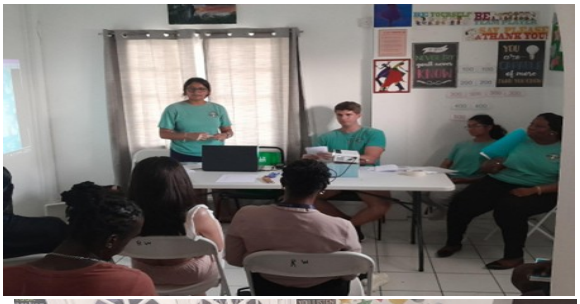


Figure 11: Transitional Living Program Life Skills sessions

Activity (4): Reach Within Crochet Collective

This year, Reach Within was proud to launch the *Reach Within Crochet Collective (RWCC)*, a groundbreaking initiative designed to advance the economic rights and leadership of adolescent girls and young women in Grenada. Supported by the Government of Canada through the **Canada Fund for Local Initiatives (CFLI)** and the **High Commission of Canada in Barbados and the Eastern Caribbean**, this project integrates mental health support, job and life skills training, and cultural arts to empower young women. Beginning in October of this year and continuing into 2026, Reach Within will train up to **60 young women**, many of whom have aged out of Grenada's child protection system or who face other risk factors, in entrepreneurship through the cultural art of crochet. To date, Reach Within has held **23** sessions across **3** sites, serving **50** young women in the community. Life Skills session topics have included: Session Etiquette & Team Building, Self Regulation & Rhythm, Communication & Active Listening, Goal Setting, Conflict Resolution, Self-Acceptance & Self-Love, Coping/Moving Forward from Life Challenges, Mindfulness, Positive Mindset & Resilience and Time Management.

"This initiative is more than a skills program, it's a healing space," said Donnet Williams, General Manager at Reach Within. "We're using a trauma-informed approach to help young women transform adversity into opportunity."

The project will culminate in a community exhibit showcasing the young women's crochet projects while raising awareness around gender equity through the arts. Through partnerships with local hotels and tourism establishments, Reach Within aims to support opportunities for participants to sell their handmade crafts and create pathways to economic independence.

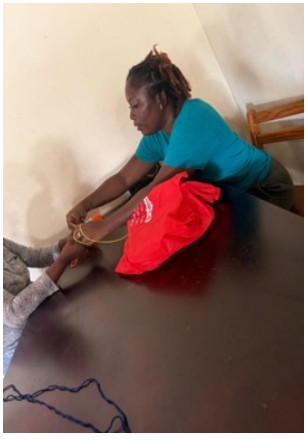


Figure 12: Crochet facilitator Keandie Cyrus teaching a group of young women in an introductory class at the Reach Within Drop-In Center

Figure 13 : Crochet facilitator Lillian James teaching a group of young women at the Reach Within Drop-In Center

Figure 14: Items made by the participants of SMILES Home for girls under the guidance of facilitator Keandie Cyrus

Activity (5): Food Security Program

In 2024, **Reach Within** received a grant from the Sandals Foundation to increase food security for children and teens living in residential care homes through the creation of sustainable food gardens. With this support, inaugural gardens were launched in two residential care homes, and existing gardens were expanded or revived in three additional homes. Under the guidance of Reach Within's lead gardener and agricultural trainer, Mr. Melevaughn Coutain, these gardens continue to thrive.

In 2025 alone, the gardens produced approximately 260 pounds of fresh food for children and teens in care. Residents also gained hands-on agricultural skills through regular mentoring sessions in the garden. This year, Reach Within facilitated 35 such sessions, helping young people build confidence, knowledge, and a deeper connection to sustainable food production.

Thanks to Mr. Coutain's dedication and leadership, Reach Within secured additional funding from the Government of Ireland to expand its food security initiatives into Hydroponics. This next phase will allow Reach Within to invest in climate-smart solutions that complement traditional growing practices. The project aims to train up to 30 youth in hydroponic farming, with fresh produce delivered to all five residential care homes.

Figure 15: Harvests from the Dorothy Hopkin Center for the Disabled Garden under the Food Security and Trauma Healing Project

Figure : Lettuce, beet, string bean, cabbage, pak choi and bell pepper seedlings to be replanted at the Dorothy Hopkin Center for the Disabled after recent harvest and soil preparation

Figure 16: Cabbage and Bell Pepper seedlings provided to the Queen Elizabeth Home for Children under the Food Security and Trauma Healing Project Activity (6): Positive Energy

Program (PEP)

The Positive Energy Program (PEP!) is a Caribbean-centered initiative focused on nervous system regulation and designed to empower communities to support young people's well-being. Grounded in inclusivity, and in the understanding that we cannot predict what each child may encounter in life, PEP! will be introduced in residential care homes and schools to ensure that all children have access to age-appropriate tools for emotional awareness and stress reduction. The program consists of a 12-module digital curriculum that celebrates Caribbean culture and rhythm while delivering developmentally appropriate nervous system regulation education through engaging 8–10 minute video lessons. Each module features experiential activities, a clear learning objective, and guided prompts for discussion and reflection. The curriculum is supported by a comprehensive training manual for community adult facilitators and educational professionals, equipping them with the knowledge needed to better understand and respond to children's trauma reactions.

The first phase of the Positive Energy Program (PEP) pilot project was launched at two residential care homes, Queen Elizabeth Home for Children (QEH)and Belair Home for Children and Adoles-

cents (BA), on November 5th and 6th, 2025. Four staff members at QEH and three staff members at BA were trained to implement PEP within their residential care settings. Feedback from participants indicated that the tool was well received, highly relevant, and viewed as a timely resource for supporting the emotional and behavioral needs

of the children in their care.

Figure 17: PEP! Digital Videos for stress-reduction

Activity (7): Community Resilience Circles

The devastation caused by Category 4 Hurricane Beryl on July 1, 2024, which destroyed 98% of structures and displaced thousands across Carriacou and Petite Martinique, underscored the urgent need to strengthen long-term mental health resilience in communities facing ongoing climate-related risks. In the immediate aftermath, Reach Within, in partnership with the Windward Islands Research and Education Foundation (WINDREF), provided on-the-ground psychological first aid to children, youth, and families. These early interventions emphasized intergenerational collaboration as a healing tool and supported the transfer of trauma-informed care practices to adults caring for young people in affected communities.

Building on this foundation, RW and WINDREF have now launched the next phase of support: Lay Mental Health Training for Community Adults. This long-term initiative includes a series of 12 full-day workshops designed to strengthen the capacity of community members in Petite Martinique and Carriacou to better serve children, youth, and families. The training aims to cultivate a network of lay mental health workers who can promote mental health awareness, provide ongoing support, and contribute to stronger, more resilient communities.

Two Lay Mental Health Training sessions were delivered in November 2025 at the Ariza Credit Union Conference Room in Carriacou. The first session, held on Saturday, 8 November and facilitated by St. George's University Psychology Professor and Clinical Psychologist, Dr. Hazel Da Breo and Mr. Jerry Bascombe of Reach Within with support from Dr. Trevor Noel, Deputy Director of WINDREF, focused on *Home – A Child's Safe Haven* and engaged 17 participants. The second session, held on Saturday, 22 November and facilitated by Dr. Da Breo and Mr. Bascombe, explored *Children as Independent Thinkers* and brought together 18 participants. Together, these trainings strengthened community capacity to support children and youth through trauma-informed, culturally grounded mental health practices.

Figure 18: Climate Resilience - Lay Mental Health Training #1

Participant feedback from the first two Lay Mental Health Training sessions revealed both the emotional depth and the transformative potential of the program. One participant shared that the training was "amazing but difficult," noting that discussions brought back memories of Hurricane Beryl as well as unresolved childhood experiences, highlighting how deeply trauma continues to shape community life. Facilitator reflections echoed this need for sensitive, trauma-informed approaches. Dr. Hazel Da Breo emphasized the importance of distinguishing therapeutic support from data-gathering practices, noting that several participants

had previously felt retraumatized by being asked to repeatedly recount hurricane experiences. She underscored that post-disaster care must prioritize stabilization, safety, and resilience-building, with memory recall occurring only at the client's pace. Dr. Da Breo also highlighted the powerful dynamic created through her partnership with self-regulation coach Jerry Bascombe, whose grounded presence and strong community rapport helped create a space of unity, trust, and emotional coherence. Together, their combined expertise and the lived experience of participants fostered a respectful, resonant, and collegial learning environment. Early sessions have already strengthened relationships, surfaced important community needs, and laid a strong foundation for the continued development of peer-counseling skills and community-based mental health support in the year ahead.

Conclusion:

As Grenada continues to face evolving social and climate-related challenges, Reach Within remains committed to strengthening the systems that protect and uplift the nation's most vulnerable young people. With deep community partnerships, a growing network of trained caregivers, and an expanding portfolio of prevention and wellbeing programs, Reach Within is poised to exponentially broaden its impact in the year ahead to impacting approximately 2400 individuals, a spike attributed to PEP!, lay person training, and expanded CPA trainings. Together with our supporters, we will continue building pathways to resilience, healing, and opportunities that ensure every child and teen in Grenada has the chance to thrive.

Respectfully Submitted by: Dr. Karen Lawson, Founder & Director of Reach Within & WINDREF Board Member and Ms. Donnet Williams, General Manager of Reach Within.

• United Nations Framework Convention on Climate Change Secretariat (UNFCCC) Secretariat – For the Caribbean Regional Collaborating Center St. George's

• Caribbean Biodiversity Fund, Ecosystem- based Adaptation Facility – For the Innovative Nature-based Solutions to Enhance Community Resilience in Grenada project

• Caribbean Biodiversity Fund, Ecosystem- based Adaptation Facility- Safeguarding Telescope's Coastline, using a Living Shoreline Approach

• Becky Bailey Foundation – For the Conscious Discipline Grenada project

- Caribbean Development Bank – For the Grenada Wastewater Treatment and Re-cycling Project

• German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, International Climate Initiative (via the Greenhouse Gas Management Institute) – For the WINDREF-based Measurement, Reporting & Verification Hub (CCMRVH)

• The Pan American Health Organization (PAHO)– The Caribbean Cancer Portal

• The Global Environment Facility (GEF) - Small Grants Programme- To enhance coral reef restoration efforts within the Grenville Bay Area through the integration of community knowledge and leadership.

• Unleashing the Blue Economy of the Caribbean - Contingency Emergency Response Component (UBEC-CERC)- Consultancy for the Construction and Deployment for FADS

• University of Trinidad & Tobago - Improving Metastatic Breast Cancer (mBC) Quality of Care and Equity in the Caribbean

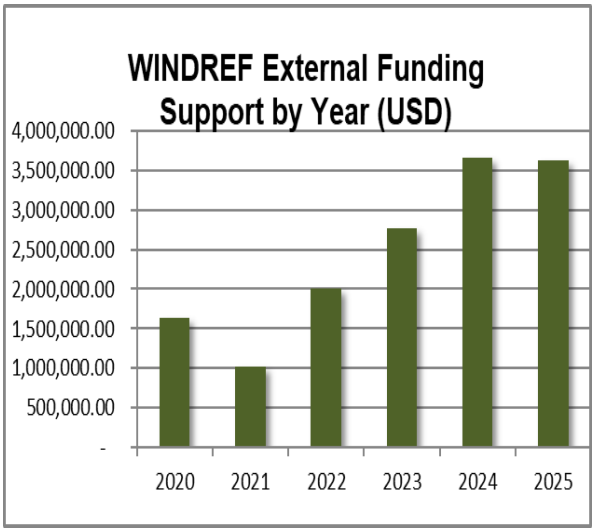
• The European Commission- A Community-based Intervention Program to Support Children's Rights and Prevent Gender-based Violence

• The McGuinness Foundation

• Stanford University

•Canada Fund for Local Initiatives (CFLI) - Preventing Intergenerational Violence and Strengthening Peacebuilding: A Gender-Responsive Empowerment Coaching Program for Fathers.

Total funding received in 2025 was $3.62 million. "This was in line with funding received in 2024 after correction of the previously listed amount." .



2025 Grant Applications

Eleven grant applications were submitted to external funding agencies in 2025. The total potential value of these grant applications was $4.2 million USD. Two of these applications were successful and six are still waiting for a final decision about funding and three were not funded (blue = funded, black = waiting for a decision, red = not funded):

• Noël, TP. Consultancy for the Construction and Deployment for FADS (UBEC-CERC)

• Landon & Waechter. Preventing Intergenerational Violence and Strengthening Peacebuilding: A Gender-Responsive Empowerment Coaching Program for Fathers (CFLI)

• Landon & Waechter. Improving school readiness and education outcomes for Grenadian Children by Coaching Fathers in Social Emotional Connection and Co-regulation (The FIFA Global Citizen Education Program)
• Landon & Waechter. Primary and Secondary Prevention of Violence Against Women and Girls Through Compassionate Coaching for Men that is Grounded in Accountability and Based on Self-regulation (UN Women's Trust Fund)
• Landon & Waechter. Empowering Early Years: A Collaborative Initiative to Build Intervention Capacity in Saint Lucia and Grenada (The Maria Holder Foundation)
• Landon & Waechter. Youth-Led Advocacy to End Corporal Punishment, Reduce Adverse Childhood Experiences and Advance Child Health Justice in Grenada (The Commonwealth Foundation)
• Landon & Waechter. Empowering Early Years: A Collaborative Initiative for Early Neurodevelopmental Screening in Grenada (The Sandals Foundation)
• Macpherson. Technical Support for the strengthening of pathogen surveillance for pandemic preparedness and veterinary training in OECS countries (FAO Pandemic Fund)
• Ryznar. Microplastics as a climate and brain health problem
• Landon & Waechter. Scaling the Caribbean Center for Child Neurodevelopment Intervention to Promote Co-regulation and School Readiness in a Caribbean Nation
• Caouette. Land Use Conflicts Between Farmers, Ranchers, and Conservationists at Ol Maisor Ranch in Laikipia, Kenya

Past Research Projects

Non-communicable Diseases

• Assessing the prevalence of diabetic complications by examining type I and type II adult diabetics for signs of retinopathy, neuropathy, nephropathy and dermatological changes associated with poor glucose control within the native Caribbean population of Grenada
• A Church-based intervention to improve hypertension prevention and control among women in Grenada
• Alcohol consumption in Grenada
• Angiotensin converting enzyme and angiotensinogen gene polymorphisms in the Grenadian population: relation to hyper-tension
• Antimicrobial properties of skin secretions from Eleutherodactylids johnstonei on bacteriological isolates
• Assessment of the effectiveness of broad-spectrum treatment to children with protozoan and nemathelminthic parasitic infections on diarrhea and school attendance
• Decompression sickness among the indigenous fishing population in Grenada: Assessing the burden of disease
•Development of a decision rule for screening Obstructive Sleep Apnea and its epidemiologic relevance to the people of Grenada

• Diurnal variation of urinary endothelin-I and blood pressure: related hyper-tension

• Epidemiology of human injuries by wild- life in six villages within Queen Elizabeth National Park, Uganda

• Evaluation of the relocation potential for villagers residing in Queen Elizabeth National Park, Uganda

• Examination and analysis of prostate cancer in Grenada

• Genetic Correlates of the Addictive Diseases: Cocaine, Alcohol and Marijuana Addiction

• Gram-negative bacteria isolated from aquatic environments of Grenada (61.4° W, 12.0°N), West Indies

• Grand Challenges Canada – For the Saving Brains Grenada Scale-up project

• Grenada School Nutrition Study: Evidence to Inform Policy

• Hypertension management and control in two Caribbean countries

• Identification of bacteria producing anti-biotics isolated from deep marine bio-films of Grenada

• Knowledge, attitudes, beliefs and practices of sickle cell anemia in Grenadian primary and secondary school children

Neglected Tropical Diseases (NTDs) and Rheumatic Fever in Grenada: a project to prevent/ eliminate helminthic and rheumatic fever infections among children (5-15 years of age)

•Novel antibiotics from tropical marine environments: drug development in Grenada

• Occupational Health Problems among Nutmeg Factories Workers, SGU Small Research Grant Initiative

• Perspectives on the Uptake of Breast and Cervical Cancer Screening in the English-Speaking Windward Islands: A Collaborative Approach

- Post-hurricane water surveillance in problematic areas of Grenada

• Prevalence of Campylobacter fetus subspecies venereal is and other microorganisms in the reproductive tracts of cattle from the southern region of Santo Domingo, Dominican Republic

• Prevalence and associated risk factors of hypertension in a sample population of native Caribbean's in Grenada, West In-dies

• Promoting Resilience Among Medical Students: A Comparison of Mindful- ness, Yoga, and Exercise

- Rural Ugandan village perspective on lion, leopard and hyena conservation

• SGU Environmental Testing Unit (ETU)

• Spice Research Program

• Sport for Health Programme

• Study of the calls of the spotted hyena at feeding

• Study of the mutacin C-7A

• Sulfate-reducing bacteria in oxidized freshwater of tropical mangroves

• Survey on the attitude of villagers in Queen Elizabeth National Park, Uganda towards the threat of lions, leopards and hyenas

• The Effectiveness of Life Seasons' Diabet-X in reducing HbA1c among Grenadians with Metabolic Syndrome
• The effects of iron-deficiency anemia on cognition and behavior in infants
• The Elimination of the Soil Transmitted Helminths from Grenada and Beyond
• The incidence and mortality of cancer in Grenada over the ten-year period: 1990-1999
• The prevalence of abnormal hemoglobin traits in Grenadian secondary school adolescents
• UNICEF – For the Saving Brains Grenada Scale-up project and Combatting Violence Against Women and Girls: Development of GBV Victims' Rights Policy for Grenada
• WINDREF / SGU Hurricane Relief
• Woman to Woman: A Cervical Cancer Education Program for Grenadian Women

Infectious Diseases

• Screening for Batrachochytrium dendrobatidis and ranavirus in Grenadian amphibians, potential threats to native Grenada Whistling Frog Pristimantis euphronides
• Characterization of Immune Factors of Chronic Chikungunya Disease
• A multi-center longitudinal research study of the ethical analysis of informed consent of the prevalence of HIV-1 infection in pregnant women and their babies on the islands of Grenada and St. Vincent
• A cross sectional study of the current status of Schistosoma mansoni in St. Lucia by field surveys and supplementary data collection
• A current appraisal of dengue virus in Grenada –serotype analysis and vector assessment
• A site receptivity study determining the threat of reintroduction of malaria into Grenada through the study of Anopheline spp. mosquito vectors
• Assessing the potential risk factors of dengue and dengue hemorrhagic fever in the tri-island state of Grenada, Carriacou and Petit Martinique Assessment of Neurocognitive Functioning in 2-year-old ZIKV-exposed Children
• Chlamydial infection among STD clinic attenders in Grenada

• Covid 19 Screening and Surveillance Programme in 2021
• COVID 19 Screening and Surveillance Programme Report and Vaccination Report
• Possible genetic predisposition to Cystic echinococcosis in Morocco and Uganda
• Dengue virus in Grenada: seroprevalence and associated risk factors
• ELISA antibody titers against group A streptococcal M protein moiety and cell wall N-Acetyl-D Glucosamine in Grenadian Rheumatic Fever patients
• Evaluating the level of perceived fear and desensitization towards HIV/AIDS in Botswana
• Investigation of Disease in Pregrowout Fish in a Commercial Aquaculture Operation in Ecuador.
• Fever in Grenada
• HIV/AIDS health education and evaluation program in Grenada
• HIV/AIDS in rural Botswana differentiating between informing and educating
• Intestinal protozoan infections in 6-12 year old children in Grenada
• Intestinal helminth infections in 6–12-year-old children in Grenada
• Investigation of the prevalence of SIV in the mona monkey (Cercopithecus mona) in Grenada
• Isolating Tcells from Rheumatic Fever positive blood: immunofluorescent assay of T lymphocytes via fluorescently labeled monoclonal antibodies
• Dengue Surveillance in a Caribbean Travel Population
• Engaging Young People as Agents of Change
• Zika and Neurodevelopment among Infants in Grenada: 36- month Assessment
• Mosquitoes and tourism in Grenada
• Rheumatic Fever in Grenada
• Rheumatic Fever: demonstrating the inheritance fashion of non-HLA B lymphocyte alloantigen D8/17, a marker for Rheumatic Fever
• Screening for Batrachochytrium dendrobatidis and ranavirus in Grenadian amphibians, potential threats to native Grenada Whistling Frog Pristimantis euphronides
• Seroprevalence of heartworm infection in dogs in Grenada
• Streptococcal program in St. Vincent
• The efficiency of diagnosing women of Toxoplasma gondii using PCR techniques in comparison with ELISA
• The prevalence of filariasis and its effects on children aged 8-14 in the central corentyne region of rural Guyana
• The prevalence of intestinal parasites in school children in rural Guyana
• The prevalence of streptococcal infection in school children aged 5–15 years in Grenada, Carriacou and Petit Martinique
• The seroprevalence of Toxoplasma gondii in a population of pregnant women and cats in Grenada, West Indies
• The Spectrum of Zika Disease in Grenada
• Zika Surveillance in the Southern Caribbean and Reference Lab Support
• A comparative study to find out if there is an association between sexual practice-es and knowledge in adult populations of Botswana and Grenada with the prevalences of HIV/AIDS
• A multi-center longitudinal research study of the behavioral significance of the prevalence of HIV-1 infection in pregnant women and their babies on the is- lands of Grenada and St. Vincent
• Determining the role of IL-15 in mediating function of viral-specific CD8+ T cells in the myelopathogenesis of HTLV-1: symptomatic versus asymptomatic patients
• Effectiveness of a formula feeding/ weaning intervention program in pre- venting transmission of HTLV-1 from seropositive mothers to newborns in Grenada
• Evaluating the effectiveness of educational methods in the prevention of Rheumatic Fever and knowledge, awareness and practices
• Identification and characterization of hantaviruses among the mammal population of Grenada
• Elimination of Lymphatic Filariasis in Guyana Program
• Neurodevelopment and Vector-borne Diseases: Building Research Capacity in the Tropics.
• Neglected Tropical Diseases and Rheumatic Fever in Grenada: A project to pre-vent/eliminate helminthic and rheumatic fever infections among children (5-15 years of age)
• Prevalence of intestinal helminth infections in rural Grenadian school children

• Seroprevalence of HIV-I and HIV-II in pregnant women in Grenada, W.I. –their knowledge of AIDS and their expo-sure hazards to the virus
• Studies examining the elimination of lymphatic filariasis as a public health problem in Guyana

Unique Projects

• Capacity Building in Safety at Sea, Onboard Fish Handling and Dropline Techniques for SVG Fishers
• Threshold Concepts and Capabilities in Veterinary Pharmacology; a Multi-Center International Study of Students' Perspective
Beekeeping in Grenada: effects of the mite Varroa jacobsoni and its control
• Building Climate Resilient Health Systems in the Caribbean: A One Health Approach. Pan-American Health Organization (PAHO).
• Caribbean Research Ethics Education Initiative (CREEi)
• Caribbean Cooperative MRV Hub
• Center for Research on Storytelling in Education (CRSE)
• Characterization of five amphibians in-habiting Grenada and subsequent isolation and antimicrobial assay of potential antibiotics derived from their skin
• Conservation Leadership in the Caribbean (CLiC)
• Effects of Grenadian medicinal plants on endemic microbial causes of diarrheal diseases
• Genotyping and satellite tracking of Hawksbill (Eretmochelys imbricata) and Green (Chelonia mydas) sea turtles in Grenada
• In-country Project Coordinator for the Eastern Caribbean Marine Managed Areas Network (ECMMAN) Project
• Innovative Nature-based Solutions to En-hance Community Resilience in Grenada (ING) Program
• Investigation of medicinal plants in Grenada
• Microgrant Award - Council on International Veterinary Medical Education
• Knowledge, Attitudes, and Practices Regarding Rabies in Grenada: A Cross Sectional Study
• Medicinal drugs from the sea: what do Grenada's waters have to offer?
• Mona monkey studies in West Africa
• NDA Toolkit & No -Objection Procedure and the Establishment of a Monitoring, Reporting and Verification System (MRVS) -Saint Vincent and the Grena-dines
• Novel Reintegration Program into the Community
• The Center for Research on Storytelling in Education
• Provision of Practical Climate Change Adaptation in Fisheries Interventions in Grenada
• REM sleep and memory
• St. George's University – For the One Health Research Initiative
• Stimulation of angiotensin 4 in cardiac fibroblasts activates matrix metalloproteinases through MAP kinases path- ways: A model for astrocytes
• The neurobiological basis of hypoglycemia associated autonomic failure
• The Spencer Foundation – For the Center for Research on Storytelling in Education
• UNICEF 2022 Spotlight Initiative STAR Public Service Announcements
• United Nations Food and Agriculture Organization (FAO) – For the Caribbean CC4 Fish project
• US Fish and Wildlife Service – For the Consumer Behavior Change Campaign and Intelligence-led Conservation Capaci-ty Assessment to Address the Illegal Wild-life Trade in Trinidad and Tobago
• Use of medicinal plants in Grenada
• WS Atkins International Limited – For the Blue Economy Assessment project
• Health, Polluted Water and Soils: Path-ways to Impact

WINDREF Associated Research Publications

Publications

Journal Articles (29)

- Aulakh, J., Wahab, H., Richards, C. Bidaisee S., Ramdass P (2025). Self-directed learning versus traditional didactic learning in undergraduate medical education: a systemic review and meta-analysis. BMC Med Educ 25, 70 (2025). https://doi.org/10.1186/s12909-024-06449-0
- Coomansingh-Springer, C., Queiroz, C., Kaplan, R., Macpherson, C.N.L.., Carter, K., Fields, P., Gilleard, J., Pinckney(2025). Prevalence of gastrointestinal parasites in small ruminants in Grenada, West Indies. Veterinary Parasitology: Regional Studies and

R. (2025). Prevalence of gastrointestinal parasites in small ruminants in Grenada, West Indies. Veterinary Parasitology: Regional Studies and Reports, https://doi.org/10.1016/j.vprsr.2025.101218

- Correa J; Sablani Shashank; Wasfi Michael; Correa Chris; Bandelow Stephan. (2025). Age dependent seizure susceptibility of CA2 hippocampal neurons. Frontiers in cellular neuroscience. doi: 10.3389/fncel.2025.1715872.
- Coughlin, J. P., Alhassan, A., Chikweto, A., Roopnarine, R., & Sharma, B. (2025). Molecular and Genetic Characterization of *Arcobacter* Species Isolated from Chicken Feces and Chicken Giblets from Grenada, West Indies. *Microorganisms*, *13*(7), 1495. https://doi.org/10.3390/microorganisms13071495.

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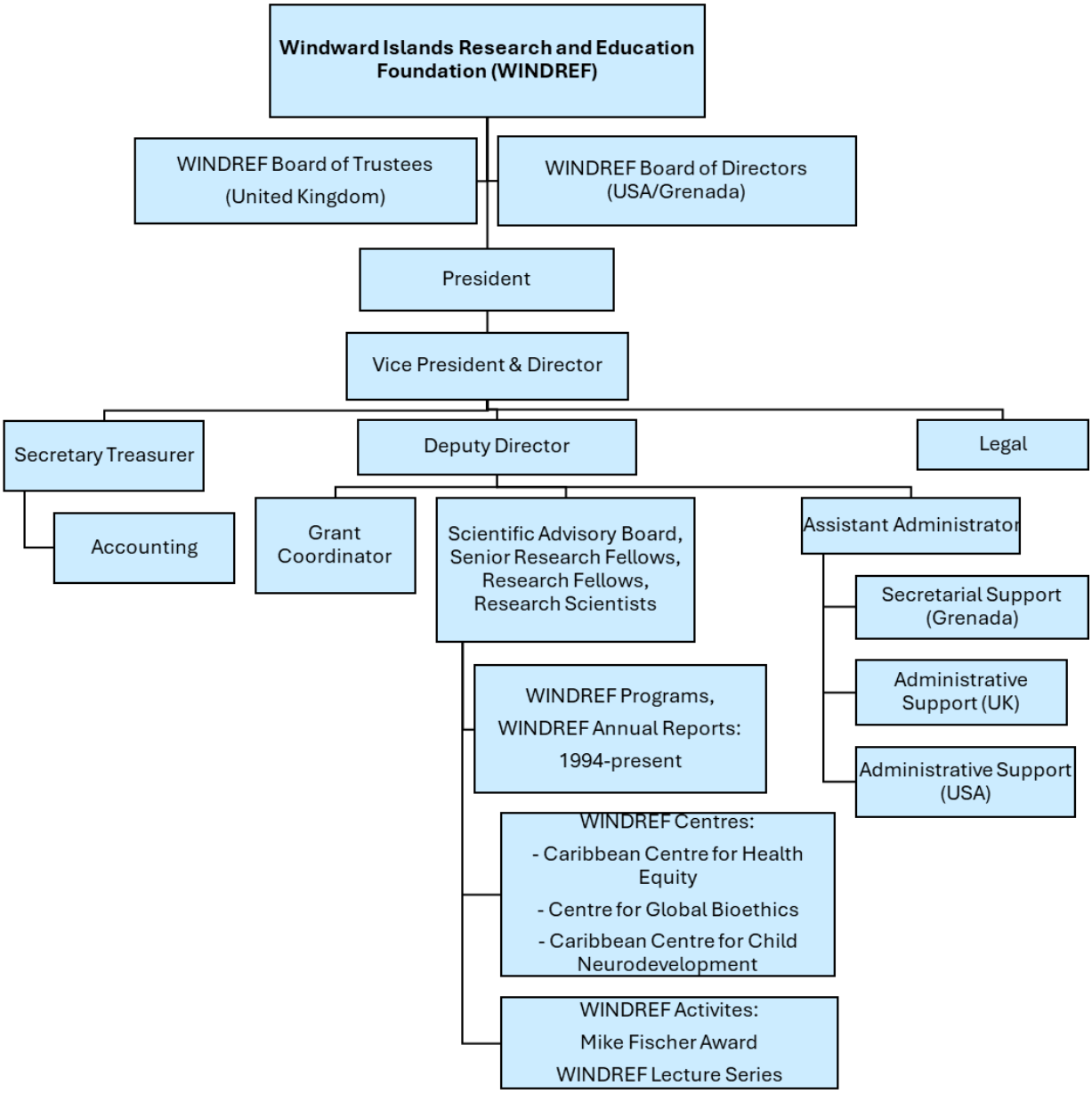
WINDREF Organizational Chart



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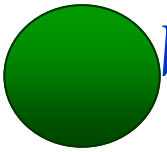

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