



UK ASSOCIATES OF BIOS

Extending Frontiers for Early Career
Marine Scientists in the UK

**THE UNITED KINGDOM ASSOCIATES OF THE
BERMUDA INSTITUTE OF OCEAN SCIENCES**

Reg No 290729

**ANNUAL REPORT AND ACCOUNTS
FOR THE YEAR ENDED 31 DECEMBER 2022**

CHAIRMAN'S STATEMENT

I am delighted to report that 2022 was a record year for The UK Associates of the Bermuda Institute of Ocean Sciences with our funding of summer course and internship scholarships reaching some \$85,000 including \$7,000 carried over funds from 2021. This was achieved with the longstanding support of The Fishmongers' Company Fisheries Charitable Trust, AXA XL, Julian & Fiona Cusack and Maggie Mills in addition to new funding from leading insurance groups Convex Insurance and AXIS Capital, and WTW (formerly known as Willis Towers Watson) advisory, broking and solutions group.

The generosity of our donors and sponsors enabled us to support 11 ocean, atmospheric and earth science undergraduate and postgraduate students from 9 UK universities, each enjoying exceptional opportunities to enhance and extend their education and scientific skills at the Bermuda Institute of Ocean Sciences. Our additional funding this year enabled 9 students to participate in intensive courses over the summer, while 3 of our scholarship cohort were awarded funding for research and teaching internships of between 3 and 4 months. Inspirational reviews of their time at BIOS illustrate the value of these experiences to our students and the exceptional marine science knowledge and skills they gain at BIOS.

Bermuda Institute of Ocean Sciences summer courses and internships provide essential and unique opportunities for young environmental scientists to boost their skills across a spectrum of disciplines and practise techniques outside the scope of traditional university courses. The world class facilities at BIOS give students unrivalled hands-on access to advanced technology in the laboratory, underwater and on the open ocean and provide opportunities to network and foster lifelong connections with fellow scientists.

BIOS educational programmes are led by scientists who are leaders in their field and alongside them students learn how to approach scientific questions, work with cutting-edge methods, collect data, analyse results, and communicate findings to a broad audience, all within BIOS's modern facilities.

The advanced ocean science research technology available at BIOS provides opportunities for students to investigate scientific questions across a host of fields, while simultaneously working with the rigour of traditional research methods which have underpinned the advancement of scientific understanding for decades. This combination of exposure to both long-established techniques and cutting-edge technology is incredibly valuable to students as they learn first-hand how to conduct quality scientific research.

With grateful thanks to our Leading Corporate and Trust Donors



CHAIRMAN'S STATEMENT continued

Summer Courses 2022

In June, July and August 9 UK Associates of BIOS supported students, among a total of 53 from around the world, joined 3 summer courses: Research Diving Methods (June) and Coral Reef Ecology (two courses in July & August).

Coral Reef Ecology: Functional Ecology of Coral Reefs (CRE)

A vitally important question facing coral reef researchers today is how reef animals and plants are influenced by their environment. In July and August, BIOS welcomed a total of 36 students to campus to gain first-hand experience of this pressing research topic through the delivery of two separate CRE courses. Each course focused on how the environment influences the baseline of reef function and the fundamental processes of photosynthesis, respiration, and calcification.

Both three-week CRE courses provided participants with a solid understanding of coral reef ecology and reef functional processes. In addition, students gained hands-on experience with state-of-the-art instrumentation and learned techniques for collecting and analysing reef community and environmental data.

The two CRE courses brought together 36 students from Canada, France, Italy, Japan, Ireland, Spain, Brazil, Cuba, Denmark, Dominican Republic, the USA and included 7 UK Associates of BIOS supported students.

Each student learned about environmental parameters such as water chemistry, hydrodynamics, temperature, and light availability, an experience which provided them with a solid knowledge base of reef functional ecology. Further, the cohort utilised both traditional and advanced approaches to investigate the impact of global climate change on reef benthic communities.

Research Diving Methods (RDM)

SCUBA diving is a powerful research tool, but conducting research underwater presents a unique set of challenges to scientists. This summer BIOS offered an inaugural summer course designed to equip students with the skill set required to tackle the challenges of underwater research, while acquiring a scientific diving qualification recognised by the American Academy of Underwater Sciences.

The hands-on course welcomed 17 students from Bermuda, Canada, Denmark, Germany, Italy, Japan, the UK, and the US, to learn about the fundamentals of scientific diving, both theoretical and practical. The intensive 3 week offering held in mid-June provided students with an academic advantage as they learned first-hand how to acquire data using underwater research techniques. Lectures and field work were combined to provide understanding of why, and how, marine scientists work underwater utilising SCUBA diving.



CHAIRMAN'S STATEMENT continued

The UK Associates of BIOS provided scholarship support for 2 students to attend the novel RDM course, during which they practised data acquisition while underwater using a range of methods and equipment and learned how to collect reliable data from the underwater environment. They also utilised underwater video and photographic surveys to study coral communities, monitor coral bleaching and disease, undertake reef fish counts, and to survey marine communities such as seagrass. The course successfully expanded the skill set and qualifications of each student, while immersing them in marine science research.



Corporate Sponsored Research Internships

Generous funding from AXIS Capital, Convex Insurance and AXA XL allowed us to award 3 fully funded post graduate internship scholarships, 2 taking place in 2022 and 1 due to commence in February 2023.



BIOS internships give graduate students the opportunity to conduct research in a truly interdisciplinary and collaborative manner. Working alongside researchers and faculty members, interns delve into scientific questions that cover a broad range of topics including atmospheric sciences, marine biology and genomics, microbial ecology, natural hazard and risk prediction, and oceanographic sciences.



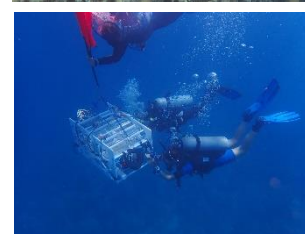
Our fully funded interns actively collaborated with peers and leading BIOS scientific staff in research projects lasting between 3 and 4 months on critical oceanic and atmospheric issues. They learnt how to process information systematically, collaborate with peers, and understand the societal impacts of universally pressing oceanic and atmospheric issues.



Our AXA XL supported intern worked on the chemical controls of ozone uptake to the ocean as a part of a PhD thesis project and will return to Bermuda soon to complete the study. A particular focus in this project is an investigation of air chemistry in the marine atmosphere by exploring



the impacts of halogens over the open ocean as part of BIOS's Bermuda boundary Layer Experiment on the Atmospheric Chemistry of Halogens (BLEACH) project.



Another of our postgraduate interns first attended the 2022 Reserch Diving Methods course and then went on to a 16-week teaching internship between August and December funded by AXIS Capital. This Teaching Assistant role operated with BIOS's prestigious Research Experiences for Undergraduates (REU) educational program which sees promising novice researchers from the US undertake hands-on research training at BIOS.



Our third intern, funded by Convex Insurance, is currently completing a Masters degree at Oxford University which may lead on to a PhD programme. The BIOS internship will run over 12 weeks between February and April 2023, researching the response of phytoplankton to oxygen limitation and other climate factors.



CHAIRMAN'S STATEMENT continued

Our student has noted that “while my master’s research project has allowed me to look at phytoplankton communities over large spatial and temporal scales, I would really enjoy the opportunity to get to know phytoplankton on a more practical level. I have a keen interest to understand the ecology of these cells at both the organism and community level, along with how the environment shapes their growth and diversity. Having studied the Ocean from a physical, chemical, and biological perspective, I would be excited to apply my findings to the wider context.”

Adding “I aspire for a career which allows me to contribute towards a more sustainable future. As an aspiring oceanographer, I strongly believe that the Ocean could and will play a very important role in modulating the course of climate change. Despite their size, phytoplankton are so abundant and resilient that they will continue to play a key role in the exchange of carbon dioxide between the atmosphere and the ocean, making a better understanding of them vital for climate and ocean models.”

Over the past 38 years nearly 200 students have taken part in experiential learning opportunities at BIOS with scholarship support from the UK Associates of BIOS. Students have learned progressive techniques from scientists at the forefront of their field, investigated pressing research questions, and utilised novel methods to gather data for innovative studies. Many are now in senior roles in science and educational establishments around the world and we are delighted to have played a modest role in helping them along their scientific career paths.

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My sincere thanks to all Trustees, Advisors and Honorary Officers for their support and hard work in our efforts in 2022. I particularly want to thank the donors who joined us in 2022, AXIS Capital, Convex Insurance and WTW who entrusted us with their funds to support our scholarship programme for the first time in 2022. I hope we have demonstrated to them and our longstanding donors that our combined efforts make a tangible impact on the development of environmental champions, many of whom will play critical roles in our understanding of key climate issues in years to come.

Christopher Day



8th February 2023

Chairman of the Board of Trustees



TRUSTEES' ANNUAL REPORT

The Trustees have pleasure in presenting their report together with the accounts and the independent examiner's report for the year ended 31 December 2022.

Reference and administrative information

Charity Name	The United Kingdom Associates of the Bermuda Institute of Ocean Sciences ("UK Associates of BIOS")
Charity Number	290729
Address	Fishmongers' Hall, London Bridge, London EC4R 9EL
Trustees	Christopher Day - Chairman Lady Vereker – Vice Chair Christopher Cunliffe Diana Viscountess Dunrossil Suzanne Ferlic Johnson Professor Richard Lampitt Nick Pewter
Hon Secretary	Lorraine Andrews
Hon Treasurer	Ian Arnold

Structure, Governance and Management

Constitution

The Charity is an unincorporated association. It is governed by a Trust, which was established by deed on 27 November 1984 and last amended on 28 September 2015. The Association was granted charitable status by the Charity Commission on 11 January 1985.

Trustees

The Trustees, the majority of whom must be UK resident, normally meet once a quarter and they form the management committee. The Board of Trustees appoints new trustees and decisions can be made by a majority vote with a minimum of three trustees present. There is no requirement for Trustees to be reappointed on a rotational or any other basis. The Trustees are aware of the Charity Commission's public benefit guidance and take this into account when making decisions to which the guidance is relevant.

TRUSTEES' ANNUAL REPORT continued

Management

The Trustees are responsible for the strategic direction and governance of the Charity, whilst some day to day running is delegated to the Hon Secretary and Hon Treasurer. There are no staff and volunteers do all work. The Hon Secretary and Hon Treasurer attend the Trustee meetings to discuss progress and development. The Charity's Trustees consider that an audit is not required for this year under section 144 of the Charities Act 2011 (the "2011 Act") and that an independent examination is needed.

Advisors

The Trustees are further supported and assisted by the Advisors who provide insightful and multi-disciplinary guidance and expertise on all aspects of the Charity's operations and activities. During the year the following persons served in these roles:

Advisors: Professor Michael Depledge CBE
 Dr Christopher Carbone
 Christopher Leftwich

These persons are invited to attend the Trustees Meetings but are not entitled to, and do not vote at these meetings.

Objectives and Activities

Charitable purposes

The UK Associates of BIOS provides a valuable donation to the Bermuda Institute of Ocean Sciences ("BIOS") education program for partial and full scholarships to UK university students to participate in courses and internships in Bermuda. BIOS has an international reputation for research and education in marine and atmospheric science. Full details can be found on www.bios.edu/education/uk-associates-of-bios/.

Activities

Bermuda is located in the middle of the North Atlantic Gyre and on the most northerly Atlantic coral reef system. This makes it an ideal location for studying the Open Ocean and sub-tropical near shore environments. BIOS is home to Hydrostation S, established in 1954, the longest running year-round data collection program for any single location in the open ocean, and the Bermuda Atlantic Time-series Study (BATS). These studies are improving mankind's understanding of global ocean circulation, ocean chemistry and biology, and how the oceans and atmosphere interact and respond to a changing climate.

The Mid-Atlantic Glider Initiative and Collaboration (MAGIC) was launched at BIOS in 2014 to enhance and leverage BIOS's long-standing ocean measurement programs southeast of Bermuda through the use of autonomous underwater vehicles. The overarching goal of MAGIC is to acquire new high-resolution measurements from underwater gliders to assess the contribution of small-scale processes that sustain the ocean's biological productivity, and to make those assessments over several years to build a statistically meaningful understanding of them.

TRUSTEES' ANNUAL REPORT continued

BIOS expertise also lies in marine microbiology, risk prediction, coral reef ecology and resilience, and fish ecology. Recent highlights of research activities include the use of Baited Remote Underwater Video Stations (BRUVS) and eDNA coding to further our understanding of native reef fish and invasive Lionfish populations.

BIOS believes that ocean science for human good involves not only research with tangible benefits for communities and the environment, but also education programs that highlight the many ways our lives are connected with the ocean. BIOS views education as a crucial part of global ocean science research, helping to translate the work of its faculty into meaningful experiences for students to better understand the importance of oceanography in the study of fish stock management, climate change and risk prediction, pollution and human health.

The mission of the UK Associates of BIOS is for the advancement of experiential education through scholarship and grant funding for both undergraduate and post-graduate UK university scientists, to enable them to study and carry out research at the Bermuda Institute of Ocean Sciences in an international student and faculty community. Without scholarships of this nature they would not have access to summer courses or longer internships, which provide hands-on educational opportunities to study Bermuda's unique marine ecosystems and geology, as they explore coastal and open ocean environments. Under the supervision of, and in collaboration with BIOS scientists, they gain field methods and unparalleled insight into the logistics required to plan and execute research activities. This experience affords a unique opportunity not readily available to UK students, and is often one that could support their career decisions as future scientists and educators.

The latest chapter in the history of BIOS has been the official merger of Arizona State University (ASU) and BIOS; and the recent launch of the ASU Global Futures Lab's 4th School of Ocean Futures of which BIOS is its major component. BIOS will now be able to look more holistically at the health of the oceans and atmosphere. And with a larger Faculty offering more opportunities for undergraduates and graduates, this should make our role even more valuable to the international student body working on collaborative research projects with experts in their fields of marine and atmospheric sciences.

Achievements and Performance

With the generosity of our donors, £70,050 (2021- £32,225) of funding was provided for BIOS internships and summer courses.

Many BIOS alumni have found the experience invaluable to support career decisions in marine science. Some return to BIOS at a more senior level to further their skills in collaborating, communicating and analysing scientific problems; making them strong candidates for future academic endeavours.

Long-term success will be measured by leveraging shared knowledge gained by a better understanding of our oceans and the impact of climate change and how that relates to the health of our oceans, fisheries, marine environment, risk prediction and ultimately human health. This demands the survival of oceanographic research and educational institutes to equip new generations of scientists with life-skills and technology to achieve academically as future scientists at the cutting-edge of discovery.

TRUSTEES' ANNUAL REPORT continued

Financial Review

The main source of funding continues to be from donations received.

Receipts from donations and associated gift-aid were £70,263 (2021 - £30,753), more than double the previous year. Payments were £70,381 (2021 - £32,346), of which £70,050 (2021 - £32,225) was spent towards our charitable causes. This represents 99.5% (2021 – 99.6%) of total payments, the balance in 2022 being incurred on bank charges and fundraising costs. The deficit for the year was £91 (2021 – deficit of £1,593).

The Trustees' policy is to maintain cash reserves above £1,000 in order to meet commitments and cover any unexpected expenditure. Cash at bank and in hand at the end of the year was £1,082 (2021 - £1,173), which is within the target range.

The Trustees are responsible for safeguarding the assets of the Charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

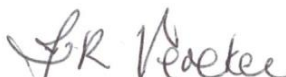
Plans for Future periods

The Trustees intend to continue and develop the education program for the benefit of UK university students.

Approved by the Trustees on 8th February 2023 and signed on their behalf by:



.....
Christopher Day
Chairman



.....
Lady Vereker
Vice Chair



.....
Lorraine Andrews
Hon Secretary

**INDEPENDENT EXAMINER'S REPORT TO THE TRUSTEES OF THE UNITED
KINGDOM ASSOCIATES OF THE BERMUDA INSTITUTE OF OCEAN SCIENCES FOR
THE YEAR ENDED 31 DECEMBER 2022**

I report to the Trustees on my examination of the accounts of the United Kingdom Associates of the Bermuda Institute of Ocean Sciences ('The Trust') for the year ended 31 December 2022, which are set out on pages 10 to 11.

Responsibilities and basis of report

As the Charity Trustees of The Trust you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011 ('the Act').

I report in respect of my examination of The Trust's accounts carried out under section 145 of the 2011 Act and in carrying out my examination I have followed all the applicable Directions given by the Charity Commission under section 145(5)(b) of the Act.

Independent Examiner's Statement

I have completed my examination. I confirm that no material matters have come to my attention in connection with the examination giving me cause to believe that in any material respect:

1. accounting records were not kept in respect of The Trust as required by section 130 of the Act; or
2. the accounts do not accord with those records.

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Richard Beckett FCA
6 Foundry House
Walton Well Road
Oxford
OX2 6AQ



8th February 2023

**STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDED
31 DECEMBER 2022**

	Notes	2022 £	£	2021 £	£
Receipts	1				
Voluntary receipts					
<i>Donations and Gift Aid</i>	3	70,263		30,753	
<i>Legacies</i>		-		-	
		<u>70,263</u>			30,753
Unrestricted bank interest		<u>27</u>			-
		70,290			30,753
Payments	1				
Charitable activities	3	(70,050)		(32,225)	
Fundraising costs		(200)		-	
Governance costs		-		-	
Bank charges		(131)		(121)	
		<u>(70,381)</u>			(32,346)
Net (payment)/receipt		<u>(91)</u>			<u>(1,593)</u>

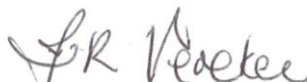
**STATEMENT OF ASSETS & LIABILITIES AND BALANCES AS AT 31 DECEMBER
2022**

	Unrestricted funds 2022 £	Unrestricted funds 2021 £
<u>Bank and cash balances</u>	£	£
Bank deposit account	-	500
Bank current account	1,082	673
	<u>1,082</u>	<u>1,173</u>
There are no liabilities as at 31 December 2022 or 31 December 2021		
<u>Funds reconciliation</u>	£	£
Cash at bank and in hand – Dec 2021	1,173	2,766
Net receipt/(payment) for the year	(91)	(1,593)
Cash at bank and in hand – Dec 2022	<u>1,082</u>	<u>1,173</u>

Approved by the Trustees on 8th February 2023 and signed on their behalf by:



.....
Christopher Day - Chair



.....
Lady Vereker – Vice Chair



.....
Ian Arnold – Hon Treasurer

NOTES TO THE ACCOUNTS

1. Basis of Accounting

These accounts have been prepared on the Receipts & Payments basis in accordance with Section 133 of the Charities Act 2011.

2. Nature and purpose of funds

Unrestricted funds are those that may be used at the discretion of the Trustees in furtherance of the objects of the Charity. The Trustees maintain a single unrestricted fund for the day-to-day running of the Charity.

Restricted funds are those funds that the Trustees are obliged to spend only on particular purposes set out by the donor or in an appeal document and these particular purposes are narrower than the Charity's objectives.

Endowment funds are funds that the Charity is prohibited by the governing document from spending as income. Normally these will be investments but may also be property held as endowment for use by the Charity. The investment receipts must be spent for the purposes indicated by the governing document.

Designated funds are part of unrestricted funds, which the Trustees have set aside or earmarked to be used for a particular purpose. They are not legally distinct funds and Trustees can at any time re-designate them for other purposes.

There were no restricted, endowment or designated funds at the beginning or the end of the year.

3. Donations and Charitable activities

	2022	2021
	£	£
Donations and gift aid		
Unrestricted funds - General	1,563	1,542
- Designated	14,500	14,711
- Total	16,063	16,253
Restricted funds	54,200	14,500
	<u>70,263</u>	<u>30,753</u>
 Charitable activity	 £	 £
Unrestricted funds - General	1,350	3,014
- Designated	14,500	14,711
- Total	15,850	17,725
Restricted funds	54,200	14,500
	<u>70,050</u>	<u>32,225</u>