

SUSTAINING DEEP-SEA BIODIVERSITY IN AREAS BEYOND NATIONAL JURISDICTION. THE DEEP-OCEAN STEWARDSHIP INITIATIVE (DOSI)

Annual Report to the Arcadia Fund. JULY 2018



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FINANCIAL REPORT

EXECUTIVE SUMMARY

Historically, the deep ocean has seldom been considered in high-level United Nations ocean management negotiations, despite the fact that biodiversity in this realm supports essential global ecosystem functions and services that are under threat. The Deep-Ocean Stewardship initiative was established during an inaugural meeting of deep-sea stakeholders in Mexico City, April 2013, who agreed on a mission to promote ecosystem-based management to: *retain the integrity of deep-ocean ecosystems whilst enabling sustainable use of resources – both living and non-living*. Since the outset, through the voluntary efforts and dedication of the leadership team and the ever-expanding membership, we have been successful in advancing science in high-level policy in a variety of disciplines. Our persistent engagement in these processes has been secured by core-funding received from the Arcadia Fund (August 2017-2022).

Box 1: DOSI 2017-18 Highlights

- **DOSI Governance modifications**
- **BBNJ Workshop – Southampton**
- **BBNJ Side-Event – New York**
- **ISA Side-Events x 2 – Kingston**
- **UN Delegates Briefing – New York**
- **UNFCCC COP23 Press Briefing**
- **ISA Stakeholder commentaries**
- **DOSI Day 2017**
- **IOC-UNESCO UN Decade collaborator**
- **DOSI workshop attendance**
- **Publications: commissioned reports, policy briefs, statements, papers, Deep-Sea Life newsletters**
- **Further funding secured for DOSI**
- **Increased DOSI engagement**
- **Cemented role as international focal point for deep-sea science input to international policy developments**

The main thrust of our work under this grant concerns sustaining marine life in areas beyond national jurisdiction by providing expert input to the negotiations for a new UN treaty on Biodiversity Beyond National Jurisdictions (BBNJ) and the International Seabed Authority (ISA) mining regulations to ensure that their outputs are fit for purpose and enforceable. To that end, during our first year with Arcadia support, we have fulfilled our key overarching objectives for this period, including formalisation of our governance structure, coordination of input from deep-sea scientists and other stakeholders to inform ongoing negotiations at the UN relating to BBNJ, at the ISA and at other fora relating to climate change (UNFCCC COP23) and the UN 2030 Agenda for Sustainable Development (UN Ocean Conference). We have hosted side-events at key UN and ISA meetings, produced and circulated policy briefings, participated in relevant high-level discussions and leveraged further funds to organize crucial stakeholder workshops and technical reports (see Box 1 for highlights). Communication of important deep-sea research and conservation matters across and beyond the network is an integral part of our work and, with a further increase in membership from a variety of stakeholders we are now reaching further afield.

Alongside our broad engagement, we have also faced some challenges within this period. The part-time DOSI office, run by Dr. Maria Baker (3 days per week) with support from Harriet

Harden-Davies for BBNJ issues (1 day per week) is overstretched owing to an ever-increasing workload to ensure adequate support for all DOSI activities. We are exploring funding options for additional administrative support, to help with the DOSI branding and communications and other elements of the work. Improvements could certainly be made in this area.

PROGRESS - ACTIVITIES, OUTPUTS, OUTCOMES AND IMPACT

DOSI Organization/Governance

During this first year of DOSI collaboration with the Arcadia Fund, the DOSI leadership team has worked through how best to organise and formalise the DOSI network as we move ahead. We thoroughly reviewed all reasonable options for our network via in-person and online meetings. Having examined in detail the pros and cons of DOSI becoming an incorporated entity, we concluded that we should remain an unincorporated, non-profit association (an initiative). In terms of leadership, we have established a DOSI Core Team consisting of the original four DOSI leads (for continuity) from 2013 – Prof. Lisa Levin (Scripps Institution of Oceanography, USA), Kristina Gjerde (IUCN), Dr. Elva Escobar (UNAM, Mexico) & Dr. Maria Baker, and have also included Harriet Harden-Davies who joined DOSI in 2014 to lead organisation of our BBNJ interactions. The Core Team also includes 24 DOSI working group leads (some new recruits), and a new [Advisory Board](#) (AB) consisting of 16 members from 14 different countries. Each AB member will remain in office for 2 years until May 2020, whereby new experts will have the opportunity to contribute to DOSI oversight duties in subsequent terms of office. We have constructed and circulated a list of roles and responsibilities for AB members (see Box 2). The AB is an active high-level team with a broad overview of our increasingly complex and busy activities, and with specific expertise in elements of our new core funding from Arcadia. We received great interest and numerous self-nominations in

Box 2: Advisory Board Roles and Responsibilities

DOSI Advisory Board members will help steer DOSI directions, broaden engagement, foster new ideas and expand outreach. They will be a voice of the international community, and will consist of a team with a broad overview of our increasingly complex and busy DOSI activities. The DOSI Advisory Board will:

- **Provide scientific and technical oversight for the planning and implementation of DOSI activities**
- **Bring new opportunities for DOSI engagement to the attention of the DOSI Executive, WG Leads and AB**
- **Approve DOSI name or logo endorsement for specific proposals, projects, statements, letters and policy briefs**
- **Help coordinate one or more key DOSI projects, tasks or action items (desirable)**
- **Raise awareness of DOSI and promote DOSI activities, scientific sessions**
- **Engage with potential funders and help seek support**
- **Coordinate DOSI activities with other relevant scientific/expert panels and bodies as well as other stakeholders**
- **Attend DOSI meeting approximately every 6 months via Zoom with DOSI Executive and WG leads.**

response to the new DOSI AB call sent out in February 2018 and, as a result, we have an extensive master list of ~100 experts, many of which will take on future AB or working group lead roles over the coming years. In our selection of DOSI Core Team members, we aim to ensure a diverse range of team members in terms of gender, age, career stage, geographical location and viewpoints whilst maintaining excellence.

In addition to the new Advisory Board, two new DOSI working groups have been established this year – the BBNJ working group led by Harriet Harden-Davies, Prof. Paul Snelgrove (Memorial University, Canada), Dr. Jeff Marlow (Harvard University, USA) & Dr. Diva Amon (Natural History Museum, UK) and the Decade for Deep Ocean Science working group led by Dr. Ana Hilario (University of Aveiro, Portugal) and Dr. Kerry Howell (University of Plymouth). We also put out a call for new leadership for one of our existing working groups on Deep-Sea Tailings Disposal and now have two new leads for this group – Dr. Sandra Brooke, (Florida State University, USA) & Renee Grogan (Environmental Consultant and World Ocean Council, Australia). Prof. Verena Tunnicliffe (University of Victoria, Canada) was joined by Prof. Hiroyuki Yamamoto (JAMSTEC, Japan) to co-lead the DOSI Minerals working group. DOSI working group leads are NOT eligible for Advisory Board membership so as to avoid any potential conflict of interest. We are currently in the process of finalising our DOSI Core Team Terms of Reference document and this will appear on our website shortly in order to improve function and increase transparency.

DOSI provides community liaison between programmes, agencies, organisations, individuals and other entities to translate and communicate research, data and expertise needs for actions that improve sustainability of the deep ocean. Currently we communicate via email (community-wide and specific working group mailing lists), DOSI website, Twitter, and via the production of online and printed information in advance of key DOSI events. In addition, Deep-Sea Life is a bi-annual informal publication that is distributed to the deep-sea community and beyond, containing highlights of research, opportunities and general community news. [Issue 10](#) was published in November 2017 and [Issue 11](#) in July 2018.

DOSI continues to expand membership, (despite the new EU rules for General Data Protection Regulation we now have 591 members with 48 new members since January 2018) and forge new links with stakeholders (e.g. the International Association for Promoting Geoethics (IAPG) task group on responsible mining, the Society for Underwater Technology (SUT), High-Seas Alliance, Synchronicity Earth, Gallifrey Foundation and others, including via capacity development efforts (e.g. at sea) and increased Twitter followers for the DOSI account (now increased from 601 in January 2018 to 853).

DOSI activities – BBNJ Process

On 22 December 2017, the UN General Assembly adopted a resolution setting forth the modalities for launching negotiations for a new international agreement for the conservation and sustainable use of biodiversity in areas beyond national jurisdiction, following the conclusion of discussions at the 4th Preparatory Committee in July 2017. The draft resolution has been co-sponsored by a record number of states (138), demonstrating the high level of support from countries around the globe. With the negotiations poised to commence on 4 September 2018, there is an urgent need to ensure that input from the deep-sea community can be provided to inform the substantive discussions, as the first draft of the treaty text is prepared. DOSI provides this role.

During the past year, we have been undertaking an informal consultation process with the deep-sea community, NGOs, IGOs and governments to prepare a draft strategy for DOSI's engagement with the development of the BBNJ instrument. The results indicate that there is

niche for DOSI to play a role in facilitating science policy engagement. It further indicates that our proposed focus areas should include: open access to scientific data and knowledge, inclusive technological innovation, and robust enforceable measures for biodiversity conservation. We are in the process of producing policy briefs to provide written input to the negotiations. DOSI has proposed a side-event at the negotiations, in collaboration with the Intergovernmental Oceanographic Commission of UNESCO and the Government of the Maldives, on the role of technology transfer in conserving marine life in ABNJ. DOSI will also be sending a delegation of deep-ocean scientists to participate in informal meetings, provide formal interventions, and collaborate with other government, IGO and NGO partners in side-events and other opportunities to engage with governments.

A working group was formed in May 2018 and there are currently 63 members from 23 countries. The mission of the BBNJ working group is to facilitate the provision of scientific and technical information to the United Nations process to develop a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

The working group objectives are to:

- Produce a synthesis of scientific knowledge relating to the conservation and sustainable use of BBNJ and identify key issues for the BBNJ instrument (i.e. area-based management tools, environmental impact assessments, marine genetic resources, capacity building and technology transfer);
- Publish open-access academic papers, policy briefs and educational materials on key issues for BBNJ and provide input to the BBNJ negotiation process through submissions, workshops and engagement; and
- Provide a focal point for scientific expertise and network engagement on BBNJ issues and a platform for collaboration between scientists and other stakeholders (including engaging with the scientific community, governments and other stakeholders at workshops and meetings and at the UN intergovernmental negotiating conference).

Listed below are the main activities from the BBNJ working group in the past year (in chronological order):

July 2017

- DOSI members Harriet Harden-Davies and Kristina Gjerde attended the fourth and final Preparatory session of the BBNJ process in New York (July 10-21st). Although this was not a formal DOSI delegation, it provided an informal opportunity to clearly identify the niche role that DOSI can play to provide advice on a scientific basis for specific elements of the instrument as the process moves into formal negotiation phase.

August 2017

- In conjunction with the 6th International Symposium on Chemosynthetic-Based Ecosystems (CBE6) in Woods Hole Oceanographic Institution, USA, DOSI held an open day (DOSI Day) on 27th August 2017, which was attended by 107 participants. The aim of this meeting was to review DOSI activities and discuss future plans in breakout groups. A key outcome from the workshop was the identification of major science-

policy issues on which DOSI could contribute to the development of a new treaty for the conservation of biodiversity in areas beyond national jurisdiction (BBNJ). [Link to workshop report](#).

October 2017

- Jane Collins joined the Deep-Sea Genetic Resources (DSGR) working group as co-lead.

November 2017

- A DSGR survey was conducted (reporting of results Feb 2018).

December 2017

- Kristina Gjerde and Harriet Harden-Davies were invited speakers at two international conferences in Australia highlighting deep-sea science policy engagement for the conservation of biodiversity beyond national jurisdiction “Transforming Vulnerability” and “Perspectives on BBNJ governance” (University of Wollongong, 1 December).

February 2018

- Comment in *Nature* “Protect the neglected half of our blue planet” (Wright et al. *Nature* 554: 164-5) on BBNJ, with half of authorship by two DOSI leads (Kristina Gjerde & Prof. Lisa Levin).
- Change of leadership – Prof. Marcel Jaspars (University of Aberdeen) joined Jane Collins (eCoast, Belgium) and Dr Elva Escobar as co-leads of the Deep-Sea Genetic Resources working group in February 2018.

April 2018

- On 5-6 April, a DOSI [workshop](#) with 23 expert participants was convened at the University of Southampton – *Science diplomacy for stewardship: advancing science-based policy for biodiversity beyond national jurisdiction through the Deep-Ocean Stewardship Initiative*. This workshop comprised active discussion of scientific and technological challenges and opportunities facing the development of the new BBNJ instrument and was funded by the Arcadia grant.
- Following the DOSI BBNJ workshop outlined above, Prof. Paul Snelgrove (Memorial University, Canada) attended the BBNJ Intergovernmental Conference organisational meeting on 16 April and presented on behalf of DOSI BBNJ working group during a side-event with the Intergovernmental Oceanographic Commission of UNESCO, Government of Belgium and Government of Nauru entitled: *The potential interlinkages between the UN Ocean Science Decade and scientific aspects in the context of BBNJ*.

May 2018

- New BBNJ working group leads meeting via Zoom (2 May 2018) to discuss strategy for upcoming BBNJ meeting in September 2018.

June 2018

- Harriet Harden-Davies and Dr Judith Gobin (University of West Indies, Trinidad & Tobago) participated as expert presenters at a capacity building workshop organized by the Government of the Maldives on behalf of the Alliance of Small Island States. (29 May to 1 June 2018) and liaised with DOSI BBNJ for material.
- On 15th June, DOSI leads Prof. Lisa Levin, Kristina Gjerde and Prof. Verena Tunnicliffe presented a DOSI/IUCN briefing in NY to over 40 UN delegates involved in high-seas and deep-seas policy. The [briefing](#) was entitled “Shedding Light on the Deep Sea –

What we know and why it matters” and a [briefing note](#) was also produced. This activity was embedded in ongoing DOSI BBNJ and ISA activities supported by Arcadia and supported by additional funds from Gallifrey Foundation and JM Kaplan Fund.

- DOSI representation and invited speaker at the International Marine Conservation Congress, Kuching, Malaysia (18th June). DOSI presentation delivered by Harriet Harden-Davies in the session "Human Impacts in the Deep Sea" chaired by Dr Diva Amon and Dr Andrew Thaler. The talk, "*Science diplomacy for stewardship: advancing science-based policy through the Deep-Ocean Stewardship Initiative*" examined the role of the DOSI network in operationalising international science diplomacy to support the BBNJ negotiations.
- On 20 June, DOSI DSGR working group members held a zoom discussion to move forward plans for policy briefs to feed into BBNJ.
- Between 26-28 June 2018, a workshop (25 participants) to discuss marine genetic resources in areas beyond national jurisdiction was convened at the University of Aberdeen. This was a DOSI-ECOast-Aberdeen collaboration led by Dr Marcel Jaspers (DOSI DSGR working group co-lead). The workshop report will be available online later this week.
- DOSI leads Harriet Harden-Davies and Prof. Lisa Levin provided expert comment on a new paper relating to BBNJ and authors include 2 members of the BBNJ working group: <https://www.the-scientist.com/news-opinion/blue-rush-one-company-leads-the-race-to-own-marine-genetic-sequences-41882>

July 2018

- Further to DOSI involvement in UN Oceans Conference to implement the UN Sustainable Development Goal 14 (2 DOSI side-events in February and June 2017 and an intervention in New York), we have recently submitted our SDG14 Voluntary Commitments updates, which should appear online shortly. This activity has raised the profile of DOSI and the importance of the deep ocean.
- On 18th & 19th July 2018, the BBNJ working group had online discussion meetings to firm up the way forward for BBNJ policy briefs and side-events.
- U.S. State Department public meeting on BBNJ for stakeholder views was attended by Suzanne Garrett (Consortium for Ocean Leadership, USA) for DOSI on 25th July, Washington DC with useful feedback for DOSI BBNJ working group.
- Harriet Harden-Davies (DOSI BBNJ working group lead), Judith Gobin (DOSI AB member) and Kristina Gjerde (DOSI Executive) attended CARICOM BBNJ workshop, hosted by the Government of Belize, Pew Charitable Trust and the High Seas Alliance (30-31 July), Belize.

DOSI activities - Deep Seabed Mining

The DOSI Minerals working group is very active and has submitted numerous commentaries and letters to the International Seabed Authority in support of robust science in the deep-sea mineral exploitation regulations, following many hours of working-group workshops and online deliberations. ISA welcomes our concerted input and there is evidence of DOSI suggestions in the latest revised ISA draft strategic plan.

DOSI co-sponsored the SEMPIA meetings, out of which arose a publication: “Biodiversity Loss from Deep-sea Mining,” C.L. Van Dover, J.A. Ardron, E. Escobar, M. Gianni, K.M. Gjerde, A. Jaeckel, D. Jones, L.A. Levin, H. Niner, L. Pendleton, C.R. Smith, T. Thiele, P.J. Turner, L. Watling and P.P.E. Waver, *Nature Geoscience*, June 26 2017. DOI: [10.1038/ngeo2983](https://doi.org/10.1038/ngeo2983)

Listed below are the main activities from the DOSI Minerals working group in the past year (in chronological order):

August 2017

- On 10th August 2017, in Kingston Jamaica, DOSI held a Side Event at the 23rd Annual Session of the International Seabed Authority (ISA) that was attended by around 140 Delegates, Contractors, Observers and ISA staff. Kristina Gjerde introduced presentations by Prof. Lisa Levin (environmental objectives), Prof. Verena Tunnicliffe (protecting active vents) and Dr. Judith Gobin (benefits for small islands); Amber Copley (University of Southampton) and Torsten Thiele (London School of Economics) aided coordination.
- In conjunction with 6th International Symposium on Chemosynthetic-Based Ecosystems (CBE6) in Woods Hole Oceanographic Institution, USA, DOSI coordinated and chaired a special session on deep-seabed mining and policy (28th August 2018). Speakers included the ISA Secretary General, Michael Lodge, Hannah Lily of the Commonwealth Secretariat and several eminent deep-sea scientists, thereby furthering the opportunity for science-policy engagements. Many productive side-meetings with the ISA secretariat, LTC members and scientists were held during the course of the conference.

September 2017

- DOSI was invited by the ISA to attend and contribute to a [workshop](#) on Preservation Reference Zones and Impact Reference Zones in Berlin, Germany on 27-29 September 2017. Prof. Ann Vanreusel (University of Ghent) represented DOSI during this meeting and five additional DOSI members participated and presented. [DOSI Report](#)
- DOSI representative, Dr Lenaick Menot (IFREMER, France), attended the Underwater Mining Institute annual meeting in Berlin, Germany on 28 September and presented a DOSI poster.

October 2017

- DOSI participated in the JPI Oceans “Ecological aspects of deep-sea mining” meeting (19 October), including on the final panel – Kristina Gjerde, Dr. Maria Baker and others. [Report](#).

November 2017

- DOSI Minerals working group prepared a response to the ISA request for stakeholder input to the “Draft Regulations on Exploitation of Mineral Resources in the Area” (ISBA/23/LTC/CRP.3*) issued in August 2017. [DOSI Comments](#).

January 2018

- Prof. Hiroyuki Yamamoto, JAMSTEC, Japan joined Prof. Verena Tunnicliffe, University of Victoria, Canada, as co-lead in January 2018.

February 2018

- DOSI members were invited to attend a workshop to discuss specific elements of draft ISA exploitation regulations: policy, legal and institutional considerations, in advance of the March ISA council session. 12-13 Feb 2018, The Royal Society, London. Convened by UK FCO and ISA. Report to follow.

March 2018

- DOSI attended the 24th ISA Session, March 5-9 2018 as official observers.



DOSI observers at the ISA, March 2018

- DOSI members attended the Azores EurOceans National Event on deep-sea mining (Drs. Ana Hilario (University of Aveiro), Ana Colaco & Nelia Mestre (University of Azores)) on 9 March 2018 and Portugal International EurOceans event in Lisbon (7 May 2018) to represent deep-sea ecology perspectives.

April 2018

- A DOSI Minerals working group sub-group submitted commentary to ISA on their Draft Strategic Plan (ISBA/23/A/13), April 2018. [Comments](#) from DOSI.

May 2018

- This paper has been produced as an output from a DOSI workshop on ISA environmental regulations: Tunnicliffe, V, A Metaxas, J Le, E Ramirez-Llodra, and LA Levin. Strategic Environmental Goals and Objectives: Setting the basis for environmental regulation of deep seabed mining. Marine Policy. (Under review).

June 2018

- Prof. Hiroyuki (DOSI Minerals working group co-lead) attended an Asia deep-sea mining PEW event entitled “*DSM best practices – current developments and future possibilities*”. Kuala Lumpur 13-14 June.

July 2018

- On 18th July, DOSI held a second [Side Event](#) at the 24th Annual Session of the ISA that was attended by 88 Delegates, Contractors, Observers and ISA staff. Talks and presenters comprised: Deep-Sea Fundamentals by Dr Diva Amon, Natural History Museum, London, UK; New Scientific Data From Exploration Contract Areas Relevant To The Management Of Deep-Sea Mining by Dr Adrian Glover, Natural History Museum, London, UK; Why Do We Care About The Deep Ocean And What Are Its Vulnerabilities? By Dr Lisa Levin, University of California, San Diego, USA; Strategic Environmental Goals And Objectives For Deep-Sea Mining by Dr Anna Metaxas, Dalhousie University, Canada; Translating Deep-Sea Science To Policy by Kristina Gjerde, International Union for Conservation of Nature (IUCN). DOSI produced 2

briefing notes and a deep-sea general information leaflet to supplement the side-event. In addition, the DOSI Observers attended the ISA Council and Assembly sessions and delivered 6 [interventions](#).

- The ISA is mandated to promote and encourage the conduct of marine scientific research in the Area and to coordinate and disseminate the results of such research. In line with this, the Secretary-General's Award for Excellence in Deep-Sea Research is intended to recognize and encourage the achievements of young researchers from developing countries who have made outstanding contributions to the advancement of scientific knowledge of the deep-sea environment or to the development of environmentally sustainable regulatory frameworks. DOSI Observer and presenter at the ISA, deep-sea scientist and co-lead for DOSI BBNJ working group, Dr. Diva Amon from Trinidad and Tobago, received the first of these awards.
- DOSI members Drs. Maria Baker, Eva Ramirez-Llodra (NIVA, Norway), Ana Hilario and Anna Metaxas (Dalhousie University, Canada) worked on the first draft of an educational book for children on the subject of deep-sea mining entitled *Treasures in the deep*. This is intended as a balanced and thought-provoking illustrated book.

DOSI activities – Climate Change

Climate change, manifested as warming temperatures, declining pH, oxygen loss, and changing ocean physics and biochemistry, is now a reality in the deep ocean, with major consequences for biodiversity, and the functions and services it provides to humans, including the mitigation of climate change. Where climate change intersects with human disturbance it acts as a cumulative stress, and can reduce the resilience of deep-ocean ecosystems and organisms and potentially amplify the impacts by generating synergies among stressors. The DOSI Climate working group has collaborated with UN agencies and other DOSI working groups in the areas of seabed mining, bottom fishing, biodiversity policy and climate policy to draw attention to these issues and better address the need for conservation measures. This working group has sponsored side events, scientific sessions, UN interventions, contributed to special reports and publications, and provided delegate updates and policy briefs addressing the interface of climate and humans in the deep ocean. Listed below are the main activities from this working group in the past year.

Listed below are the main activities from the DOSI Climate Change working group in the past year (in chronological order):

August 2017

- On August 25-26, 2017 DOSI hosted a workshop in conjunction with the UN Food and Agriculture Organization (FAO) and Regional Fisheries Management Organisation (RFMO) representatives to examine climate and fisheries in the deep ocean. An in-depth technical report titled *Deep-Ocean Climate Change Impacts on Habitats, Fish and Fisheries*, has recently been submitted to the FAO for review and publication. This report addresses future impacts of warming, ocean acidification, ocean deoxygenation and altered POC flux on various habitats with a focus on vulnerable marine ecosystem indicators and deep-sea fishes from 200-2500 m, developing appropriate analytical and modeling approaches.

November 2017

- In November 2017 at COP 23 (Bonn, Germany), DOSI Climate Change working group members (Prof. Lisa Levin, Prof. Francoise Gaill (French National Centre for Scientific Research) and Thorsten Thiel) led a press conference on *Climate observations for managing the deep ocean*. Further to previous DOSI engagements at COP21 and 22, DOSI continues to promote inquiry into the cumulative effects of greenhouse gas emissions and climate change combined with other human-induced stressors in the deep sea. DOSI raised awareness among climate delegates, NGOs and IGOS on the role of the deep ocean in climate mitigation and adaptation.

December 2017

- During a scoping meeting in December 2017, DOSI members Dr. Elva Escobar and others ensured that the deep ocean is now included in the IPCC Special Report on Oceans and Cryosphere. DOSI Climate Change working group members contributed to the Deep Sea elements in Chapter 5 (*Changing Ocean, Marine Ecosystems and Dependent Communities*) of the Report, through participation in 3 Lead author meetings, and as contributing authors. The report will be finalized in 2019.

March 2018

- DOSI Participated in the conference *Climate Change and the Law of the Sea: Adapting the Law of the Sea to Address the Challenges of Climate Change* contributing scientific guidance (to policy experts) on the *Changing Ocean, Ecosystem Responses and Solutions*. Prof. Lisa Levin had a productive meeting in Singapore with Law of the Sea experts.

June 2018

- DOSI Special Session (*The deep ocean under climate change*) during the 4th International Symposium on the Effects of climate change on world's oceans (ECCWO) under PICES, ICES-CIEM, FAO and IOC UNESCO (Washington), June 4-8 2018 (Prof. Nadine Lebris, Prof. Lisa Levin & Dr. Andrew Sweetman (in absentia)). The DOSI Climate working group meeting also convened during this meeting to discuss progress and next steps.

Other DOSI activities (in chronological order)

August 2017

- The DOSI Fisheries working group held a workshop at University of Maine, reviewing efficacy of impact assessments of deep-sea fisheries on Vulnerable Marine Ecosystems (VMEs) and deep-sea fish species. Les Watling and Matt Gianni, co-chaired in late 2017 and are moving this project forward as leads of the DOSI fisheries working group.
- New DOSI Banner and presentation templates produced and Zoom account established to improve communications.

September 2017

- DOSI representatives participated at IMPAC4 (International Marine Protected Areas Congress), in Chile, 4-5 September 2017.

October 2017

- Kristina Gjerde was an invited speaker at "Our Ocean Conference", Malta (5-6 Oct 2017) on "*how to advance good management for a safe and healthy Ocean*" focused on the need to stretch our horizons to include deep seas and high seas.

- DOSI member Prof. Murray Roberts (University of Edinburgh) introduced DOSI to IPIECA (the global oil and gas industry association for environmental and social issues) during a meeting in Madrid on 17th October.

November 2017

- DOSI is often highlighted during outreach events. To that end, a talk (including abstract proceedings) by Drs. Ana Hilario and Maria Baker, entitled “*The deep ocean – a new stewardship frontier*” was delivered during the Conferência de Homenagem ao Professor Mário Ruivo “Desenvolvimento Sustentável dos Oceanos: uma utopia útil” (13-14 Nov, Faro, Portugal).

December 2017

- DOSI has produced a draft letter to the UN Intergovernmental Oceanographic Commission (IOC) in response to the newly-released *Global Ocean Science Report (GOSR)*, as the latter did not include the deep ocean. We had a response and assurance from IOC that the second GOSR will cover deep-ocean science.
- A further outreach talk entitled “*Examples from the Deep-Ocean Stewardship Initiative*”, and delivered by Dr. Eva Ramirez-Llodra, presented DOSI as a great example of advancing science in policy during an international COST workshop in Liverpool, UK, entitled “*Bridging the gap between scientific results and governance*” (7 Dec 2017).

February 2018

- Publication of DOSI Open Access paper from the Deep-Sea Tailings Disposal working group: Vare LL, Baker MC, Howe JA, Levin LA, Neira C, Ramirez-Llodra EZ, Reichelt-Brushett A, Rowden AA, Shimmield TM, Simpson SL and Soto EH (2018) Scientific Considerations for the Assessment and Management of Mine Tailings Disposal in the Deep Sea. *Front. Mar. Sci.* 5:17. [doi: 10.3389/fmars.2018.00017](https://doi.org/10.3389/fmars.2018.00017)
- Ocean Sciences Meeting, Portland, Oregon, February 2018.
 - Town hall in collaboration with DOOS
 - Biodiversity Research Coordination Network (Presentation on DOSI/DOOS by Lisa Levin)
 - DOSI co-hosted science policy session
- DOSI Core Team Strategy Meeting – 21st February 2018 – via Zoom.
- Publication: Exploration before Exploitation – Science Editorial Erik Cordes and Lisa Levin. <http://science.sciencemag.org/content/359/6377/719>

March 2018

- DOSI Executive submitted an abstract to OceanObs19 entitled: The Deep Ocean Stewardship Initiative: An international and integrated effort to future-proof our deep-ocean realm in the development of the blue economy. The OceanObs’19 Program Committee subsequently invited DOSI to submit a community white paper on “Successful Blue Economy Examples with an emphasis on international perspectives” to be published in a special issue of *Frontiers in Marine Science* prior to the conference next year. This contribution will feed into the larger goals of OceanObs’19: To develop effective strategies for a sustained, multidisciplinary, and integrated ocean observing system and to better connect user communities and observers.
- DOSI Deep-Sea Genetic Resources working group Zoom meeting – 29 March 2018
- 1st DOSI Mailchimp Newsletter to community.

- Guest Lecture Series by Prof. Lisa Levin at 5 institutions: Kochin, Kerala India. Erudite Scholar Program (covering deep-ocean biology, industrialization, climate change, science diplomacy).

May 2018

- Organisation of DOSI special session at World Conference of Marine Biodiversity, Montreal, Canada, May 2018. This meeting is a major focal assembly to share research outcomes, management and policy issues and discussions on the role of biodiversity in sustaining ocean ecosystems. Prof. Lisa Levin was the session moderator for DOSI and presentations were given on economics, MPAs, deep-sea mining, and marine genetic resources.
- Public Outreach: Science and Ethics of Seabed Mining: Fleet Museum, San Diego (presented by Prof. Lisa Levin) <https://www.uctv.tv/shows/32160>.

June 2018

- During the event entitled: Transatlantic Research Cooperation to Treasure and Protect the Atlantic Ocean, Washington, DC. (Woodrow Wilson Center, NOAA), Prof. Lisa Levin participated in the Panel: Where should our Atlantic Ocean cooperation go from here?
- DOSI Online Core Team Strategy Meeting - 26 June 2018 – via Zoom.

July 2018

- In December 2017, the UN General Assembly proclaimed the [United Nations Decade of Ocean Science for Sustainable Development \(2021-2030\)](#). This decision represents a consensus by the global community on the importance, necessity and key role of ocean science and observations for ocean stewardship and society as a whole. In our proposal to Arcadia, we stated that we would explore working with IOC-UNESCO in order to insert deep-ocean scientific research into the proposed UN Decade. Following discussions with IOC colleagues, DOSI has been “cordially and enthusiastically invited” to contribute to the UN Decade planning. We have instigated a new DOSI working group to take on this charge for the deep-ocean community, with a first Zoom meeting to be had on 31st July 2018 and a first workshop planned in Lisbon for October 2018. We have also started exploring the process of official observer status for IOC.
- Prof. Lisa Levin delivered a DOSI outreach webinar entitled “Beyond the Last Frontier – The Deep Ocean and Why It Matters” to the NOAA Sanctuaries webinar series. July 2018. [Link](#).

Ongoing activities

- Updates to DOSI bibliographies for [deep-sea mining literature](#) and [deep-sea climate change](#) publications.
- We are delighted with new milestones for readership of some of our key DOSI scientific publications (open access), which have reached over 17,000 views each: Cordes et al. 2016. Environmental impacts of the deep-water oil and gas industry: a review to guide management strategies. *Frontiers in Environmental Science*; Levin & LeBris 2015. The deep ocean under climate change. *Science*; and Levin et al. 2016. Hydrothermal Vents and Methane Seeps: Rethinking the Sphere of Influence. *Frontiers in Environmental Science*.
- DOSI continues to encourage experts from the deep-sea science community to self-nominate to the 2nd UN World Ocean Assessment Pool of Experts and has facilitated

national and international connections. Several DOSI deep-sea scientists have signed up for this important assessment effort.

Additional Funding Secured

In line with our Arcadia funding T&Cs, we have informed Arcadia as and when DOSI has secured funds alongside those from Arcadia in order to enhance our work. Below is a summary of the main funding received and we continue to attempt to secure further funds for our activities:

- January 2018. DOSI was awarded a grant for additional deep-sea mining-related activities for 2018 from the J.M.Kaplan Fund (<http://www.jmkfund.org>). This is an extension of a previous grant, which ended in December 2017 and runs from January 2018 to December 2018. The total grant value is \$60,000 USD and is administered via the Scripps Institution of Oceanography, UC San Diego, USA, led by Lisa Levin. The grant is helpful in enhancing our interaction with the International Seabed Authority in terms of workshops, meeting attendance and coordination of these activities.
- February 2018. DOSI received funds from the PEW Charitable Trusts for DOSI to produce a report entitled “Strategic Environmental Goals and Objectives for Seabed Mining”. This work was largely based on previous DOSI workshop outcomes. This report will help Pew and other interested parties respond appropriately to the working drafts of ISA Environmental Regulations, by ensuring that the regulations are strong and comprehensive to protect ecologically important marine areas. The total award was £37,390 and is being administered through the University of Southampton. This report was finalized and circulated, along with an associated briefing, during the DOSI side-event at the ISA on 18 July 2018.
- DOSI Climate and Fisheries working groups received funds from the UN Food and Agriculture Organisation (FAO) to the value of \$56,100 to undertake research and compile a technical report entitled: “Deep-ocean climate change impacts on habitat, fish and fisheries” which was completed in April 2018 following an initial workshop in August 2017. Further scientific peer-reviewed publications are underway.
- The [Gallifrey Foundation](#) kindly contributed funds to provide lunch at the DOSI/IUCN UN briefing on the deep ocean in June 2018 (see above).
- Further to our proposal, a small DOSI team (Baker et al.) has been awarded funding from the Commonwealth Secretariat (£3,400) and includes INDEEP funding to produce a children’s book (open access) entitled “Treasures in the Deep”. The book is currently being written and illustrated and will highlight the issues around deep-sea mineral extraction and associated environmental concerns. This will be a freely-available outreach product specifically aimed at residents of Small Island Developing states who have mineral resources in their EEZs, as well as society in general. The Commonwealth Secretariat has also funded reprint costs for a previous children’s book co-authored by Baker on the topic of deep-sea litter (Message in a Bottle) – another freely-available educational product.
- Finally, the ISA Endowment fund has granted \$12,500 to enable attendance of 5 scientists from developing nations at DOSI Day and 15th Deep-Sea Biology Symposium (Monterey, California) September 2018.

Future activities August 2018-2019

- **BBNJ meetings.** A DOSI delegation of scientists and ocean governance experts will attend the 1st session of the Intergovernmental Conference on an internationally binding instrument under the UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, to be held in New York in September 2018. A DOSI-led side-event on technology transfer for conservation has been proposed in collaboration with UNESCO-IOC and the Government of the Maldives. DOSI has also been invited to co-badge a side-event (and subsequent workshop) on MGR at the BBNJ Intergovernmental Conference in September, along with IUCN, Jamaica and Norway (6th September). DOSI will also join the Deep-Sea Conservation Coalition and others to discuss deep-sea mining in light of the BBNJ agreement during the conference. Several policy briefs are currently in preparation for these events.
- A **DOSI Day** is organized for the 9th September 2018, before the start of the 15th Deep-Sea Biology Symposium in Monterey, USA. 102 participants have signed up. This workshop aims to update deep-sea community members about DOSI activities and to discuss how the deep ocean community can work together on key research knowledge gaps needed for cross-cutting issues for deep-ocean stewardship. This will be closely linked to the UN Decade of Ocean Science.
- A **DOSI Special Session** is being organized at 15th Deep-Sea Biology Symposium, Monterey, 11th September 2018, chaired by Maria Baker & Lisa Levin.
- **Workshop COP21 to UN Decade**, 10&11 September, Paris. DOSI climate messages will be delivered during this meeting by Lauren Mullineaux and Elva Escobar.
- DOSI Minerals working group members are constructing a **commentary on ISA draft exploitation regulations** dated 9th July 2018, which are open for review until 30th September 2018.
- **1st DOSI Decade working group meeting**, Aveiro, Portugal, 18-19 October 2018. This workshop will identify major knowledge gaps in deep-sea biological sciences and will outline a global deep-sea ecology programme.
- **Royal Society, London Meeting** – Beyond Challenger: A new age of deep-sea science and exploration, 12-13th November 2018. This scientific discussion meeting will be attended by members of the DOSI Decade working group to facilitate cross-over between these two programmes.
- DOSI is likely to have a presence at **COP24** (December, 2018, Paris)
- **Deep-Sea Life Issues** 12 (November 2018) & 13 (June 2019) co-produced with INDEEP and the Deep-Sea Biology Society and distributed to the INDEEP-DOSI mailing list.
- DOSI is supporting an **educational activity** in Trinidad and Tobago led by Diva Amon and Judith Gobin called "[Deep sea in my backyard](#)" – 13 August 2018.
- **ISA Meetings.** DOSI will plan to attend the March ISA session in Jamaica and also the July/August annual session in Jamaica in 2019 where we will aim to deliver a 3rd side-event.

Are we on track?

DOSI has made great progress in many areas during the past year, as outlined above. In terms of our first year, we are on time and on track for all outputs outlined in our original proposal. There have been some slight alterations to two of the originally proposed activities. 1) The

proposed EREGS2 meeting (originally planned for December 2017) did not happen because it was agreed with Pew Charitable Trusts (the key funder of this initiative) that a technical report drawing on the discussions of the EREGS1 meeting would be more useful; this initiative was successful. 2) We originally proposed that during year 1 DOSI would work on establishing task teams to link cross-over issues (such as between ISA, BBNJ, COP, SDG14). Rather than establish a new working group, we identified that a more efficient way forward would be for the DOSI Executive to provide this integrative function, guided by our Advisory Board and informed by meetings that bring together all working group leads (virtual meetings held every 3 months, utilising the Zoom platform). The teams relating to EIAs, spatial planning and definitions have been formed as task teams under the newly established BBNJ working group, led by Harriet Harden-Davies. The idea for a compatibility workshop for September 2018 has been integrated into the planning for DOSI Day on 9th September 2018 and is being led through activities underway under a newly formed DOSI UN Decade of Ocean Science working group and DOSI BBNJ working group. The nature of our priority focus areas sometimes makes it difficult to predict specific target dates for some elements due to the need for DOSI to be responsive to new legal and policy developments, and the evolving timelines associated with international negotiations. DOSI's network model relies largely upon experts giving their time for free and securing funding for specific activities, including human resources to coordinate and deliver activities. Nevertheless, DOSI is on track to deliver more than the outputs proposed in order to respond to the growing need for robust independent scientific input to governments, NGOs and IGOs that DOSI offers.

Impact

DOSI works to raise awareness among all deep-sea stakeholders about the importance of sustaining a healthy and productive deep ocean for long-term global ocean health. Through our efforts, we know that we are making progress. Impacts for this work are not always directly measurable, although here are some indicators:

- Side-events: 4 side-events (ISA 2017 – 140 participants, ISA 2018 – 88 participants, UN Briefing 2018 – 40 participants, BBNJ ICG Organization meeting – 50 participants)
- Inclusion in reported outputs from UN/ISA deliberations.
- DOSI suggestions accepted into ISA draft strategic plan.
- Interventions during policy sessions – 6 at ISA in 2018
- Invitations for DOSI to be represented at policy-related meetings
- DOSI Publications (4 peer-reviewed papers, 5 reports, 5 workshop reports, 3 policy briefs, 22 DOSI presentations, 2 stakeholder commentaries to ISA)
- Policy briefs 2 at ISA and 1 at UN Headquarters NY
- Media - COP23 Press conference
- DOSI Special Sessions - 3
- DOSI Day attendance: 2017 – 107, 2018 – 102 signed up so far
- Deep-Sea Life circulation – approx. 1800 deep-sea and marine science community members receive the link to this publication directly and it is further disseminated within institutions.
- DOSI successful funding applications – 6

- DOSI support letters for funding: We occasionally receive requests from DOSI for letters of support from community members who are applying for funding to address DOSI-related research. We have sent 6 letters of support in the past year to colleagues from Russia, Tasmania, USA, Norway, Portugal & UK.
- Increased following in terms of DOSI membership (591 members) and Twitter (853 followers)

Financial report

To be submitted.