



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

ETH-Zurich
Prof. Gretchen L. Früh-Green
Institute of Geochemistry and Petrology
Clausiusstrass 25
CH-8092 Zurich, Switzerland
Tel: +41 1 632 3794 Fax: +41 1 632 1636
Email: frueh-green@erdw.ethz.ch

22 July 2019

International Seabed Authority, Delegates
Secretary General, Mr. Michael Lodge

Statement of concern from the international scientific community

Dear Delegates of the International Seabed Authority,
Dear Mr. Lodge,

We, the undersigned representatives of varied scientific disciplines from across the globe, are writing to express our concern over the recent approval of exploration contracts for massive sulfide mineral exploration along the Mid-Atlantic Ridge. With this letter, we would collectively like to make the following statement:

The depths of our oceans remain full of mystery. But the deep ocean is already under threat from the controversial deep-sea mining industry.

We have dedicated our careers to understanding the mysteries of the deep sea. Right now, we know more about the surface of the moon than the seabed. Important and fascinating deep ocean discoveries are being made all the time, including unique species and ecosystems that offer us vital clues to the origins of life.

There is so much to learn about the chemical, physical and biological processes in the deep sea, and their relevance to the health of our oceans more generally. Yet around a million square kilometres of the international seabed have already been contracted out to individual governments and companies to explore for potential deep-sea mining. This compromises scientific pursuit and puts the overall health of ocean ecosystems under threat.

The international seabed belongs to all of us collectively. We recognise the privilege and responsibility of studying deep ocean systems for the benefit of human knowledge. Scientific research to understand how deep-sea ecosystems function and support vital processes is distinct from activities carried out under exploration contracts granted by the International Seabed Authority – ISA. The purpose of these activities is different. The former is to learn and discover, to better scientific knowledge about the largest ecosystem on Earth, while the latter is to assess the economic potential for extraction.

Deep sea mining would potentially cause severe and irreversible damage to our oceans and marine life and further threaten the global climate. The development of the deep-sea mining industry risks unavoidable damage to deep sea ecosystems. We need a far greater public debate about whether we can collectively accept the harm to our oceans that deep sea

mining would entail – including the potential loss of discoveries yet to be made. We therefore support the agreement of a robust global regime for Biodiversity Beyond National Jurisdiction to protect international waters and its seabed from the cumulative impacts of multiple human-induced pressures, which the International Seabed Authority's mandate does not cover.

We are additionally concerned that the International Seabed Authority Secretariat is increasingly prioritising development of the deep-sea mining industry, even at the cost of threatening ecosystems that have been found nowhere else in the seabed to date, such as the Lost City in the Mid-Atlantic Ocean. Specifically, the exploration area that is included in the approved application ISBA/23/LTC/3 to Poland encompasses the Lost City, TAG, and Broken Spur hydrothermal vents and their surrounding deposits that have been the focus of decades of high-priority, international research. These areas have been identified by several intergovernmental organizations – such as the Convention of Biological Diversity and the World Heritage Centre of UNESCO and the International Union for Conservation of Nature – as places with outstanding biological, ecological, and geological significance that should be conserved.

We should study and conserve the deep sea, not open it up to destructive activities. We strongly encourage ISA to consider the input of the international science community when evaluating future requests for deep-sea mineral exploration. These unique hydrothermal vent sites are irreplaceable, and their vulnerability to nearby exploration, let alone seabed mining, is entirely unknown.

Sincerely,

A handwritten signature in cursive script, reading "G. Früh-Green".

Dr. Gretchen Früh-Green

Professor, Marine Geology and Geochemistry
Department of Earth Sciences, ETH Zurich

Co-signed by:

Rika Anderson, Ph.D., Assistant Professor, Carleton College, **USA**
Muriel Andreani, Ph.D., Associate Professor, Ecole Normale Supérieure de Lyon, **France**
Karmina Aquina, M.Sc., Doctoral student, ETH Zurich, **Switzerland**
Wolfgang Bach, Ph.D., Professor, University of Bremen, **Germany**
Stefano Bernasconi, Ph.D., Professor, ETH Zurich, **Switzerland**
William Brazelton, Ph.D., Assistant Professor, University of Utah, **USA**
Mathilde Cannat, Ph.D., Senior Scientist, Université de Paris, Institut de Physique du Globe de Paris, **France**
Dawn Cardace, Ph.D., Associate Professor, University of Rhode Island, **USA**
Anna Davidson, Ph.D., Scientist and Artist, University of California, Davis, **USA**
Javier Escartin, Ph.D., Director of Research, École normale supérieure, Paris, **France**
Julie A. Huber, Ph.D., Associate Scientist, Woods Hole Oceanographic Institution, **USA**
Benoit Ildefonse, Ph.D, Directeur, Géosciences Montpellier, CNRS, Université de Montpellier, Université des Antilles, **France**
Juergen Koepke, Ph.D., Professor, Leibniz University Hannover, **Germany**
Susan Q. Lang, Ph.D., Assistant Professor, University of South Carolina, **USA**
Marvin D. Lilley, Ph.D., Professor, University of Washington, **USA**
Hai-Quan Liu, Ph.D. Assistant Researcher, Chinese Academy of Sciences, **China**
Bénédicte Ménez, Ph.D., Professor, Université de Paris, Institut de Physique du Globe de Paris, **France**
Telmo Morato, Ph.D., Deep-sea Scientist, Okeanos University of the Azores, **Portugal**
Antony Morris, Ph.D., Professor, Plymouth University, **UK**
H. Lizethe Pendleton, Student/Microbiology Technician, University of Utah, **USA**
Stéphane Rouméjon, Ph.D., Research Scientist, formally ETH Zurich, **Switzerland**
Lotta Ternieten, M.Sc., Doctoral student, ETH Zurich, **Switzerland**
Amila Sandaruwan Ratnayake, Ph.D., Senior Lecturer, Uva Wellassa University, **Sri Lanka**
Matthew O. Schrenk, Ph.D., Assistant Professor, Michigan State University, **USA**
Megan Seipp, B.Sc., Masters Student, ETH Zurich, **Switzerland**
Jason Sylvan, Ph.D., Assistant Professor, Texas A&M University, **USA**
Geoff Wheat, Ph.D., Research Professor, University of Alaska Fairbanks, **USA**
Rui Zhao, Ph.D., Postdoctoral Researcher, University of Delaware, **USA**