WORKSHOP ON
TAXONOMIC METHODS AND STANDARDIZATION OF MEIOFAUNA IN THE CCZ

Jointly organized by the
International Seabed Authority, Kingston, Jamaica
and the University of Ghent, Belgium

Background Document

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Introduction:

Following the adoption of the regulations on prospecting and exploration for polymetallic nodules in the Area by the International Seabed Authority, six entities entered into exploration contracts in 2001; these were: Interoceanmetal Joint Organization (IOM), Yuhzmorgeologiya, the Government of the Republic of Korea (KORDI), China Ocean Mineral Resources Research and Development Association (COMRA), Deep Ocean Mineral Resources Development Co. Ltd (DORD-Japan) and the Institut Français de Recherche pour l'exploitation de la mer (IFREMER-France). Later on, the Government of India signed a contract in 2002, and in 2006, the Institute for Geosciences and Natural Resources of Germany signed a contract as well. Nauru Ocean Resources Inc. signed a contract in 2011, Tonga Offshore Mining Limited (TOML) signed in 2012, and UK Seabed Resources Ltd, signed a contract in 2013. As of 1 June 2015 the Authority had approved a total of twenty-six plans of work for exploration and has entered into fifteen-year contracts for exploration for marine mineral resources in the Area with twenty-two contractors. Fourteen of these contracts are for exploration for polymetallic nodules, five contracts for exploration for polymetallic sulphides and three contracts for exploration for cobalt-rich crusts. Of the above mentioned contracts, the first six will expire in 2016 and another one in 2017.

Each one of the contractors is required to submit an annual report to the Secretariat, covering its programme of activities in the exploration area as disclosed in each of the five year plans of work for their respective areas. The reports must contain sufficiently detailed information on: exploration work during each calendar year, including the provision of baseline environmental data and to establish baselines against which to assess the likely effects of its programme of activities under the plan of work for exploration on the marine environment and a programme to monitor and report on such effects. In this regard, contractors are required to:

(i) gather data on biological communities, taking samples of fauna representative of variability of habitats, bottom topography, depth, seabed and sediment characteristics, abundance and the mineral resource being targeted;

(ii) Collect species-specific data on the sea floor communities specifically relating to megafauna, macrofauna, meiofauna, microfauna, demersal scavengers and fauna associated directly with the resource, both in the exploration area and in areas that may be impacted by operations (e.g. the operational and discharge plumes); and to report on

(iii) the results on test of proposed mining technologies and the results obtained from environmental monitoring programs, including observations, measurements, evaluations of environmental parameters: abiotic and biological.

Taxonomical workshops on deep-sea fauna:

After a decade of annual reporting from contractors for polymetallic nodule resources, the need to provide guidelines for standardization on taxonomy reporting practices was detected. Following informal consultations between the Secretary-General and exploration contractors for polymetallic nodules in January 2012 in Jamaica, it was decided to organise a series of taxonomic exchange workshops on the megafauna, macrofauna, and meiofauna in contract areas. The need for such workshops bringing together contractors and experts for the different faunal groups became apparent to address potentially varying taxonomic standards and the differing taxonomic expertise available. Such needs were also in line with the international project INDEEP, which among other objectives, aims at providing large scale syntheses on biogeography and biodiversity patterns in the deep sea as well as fostering environmentally sustainable management of deep-sea resources.

The first one of these workshops, on “The Taxonomical Standardization of Deep-sea Megafauna”, was hosted by the Centre for Marine Biodiversity of the Senckenberg Institute in Wilhelmshaven, Germany in June 10-15, 2013. The megafauna is defined as organisms large enough to be determined on photographs, typically larger than 1 cm in size. The second of the three workshops, on “The Taxonomic Standardization of Deep-sea Macrofauna associated with polymetallic nodule deposits”, was hosted by the Korean Institute of Ocean Sciences and Technology (KIOST) at the East Sea Research Institute in November 23-30, 2014. Exploration of the abyssal region of the Clarion-Clipperton Fracture Zone (CCFZ) reveals that there is considerable biodiversity at many scales. Most of this biodiversity remains undescribed. The reasons for this are many but relate fundamentally to the great size of the region, difficulty in sampling at great depths far from land and a discrepancy between the rate of discovery of new species and the availability of taxonomic expertise to describe them (the so called taxonomic impediment).

Currently the Area is being explored by exploration contractors for polymetallic nodules, polymetallic sulphides and cobalt-rich crusts with the Authority. Each contractor has a particular area or areas and is obliged to conduct environmental baseline studies and submit relevant biological survey data to the International Seabed Authority, which enables the ISA to assemble the biodiversity data collected by the various contractors. Each mineral (nodules, sulphides and crusts) appears to have specific associated fauna and as such would benefit from available data and information. For example, faunal data associated with inactive vent sites which contain sulphides are sparse and would benefit from additional data from contractors who only recently acquired their status). Such geographic biodiversity knowledge will be required for informed decision-making on environmental management and on subsequent exploitation licenses.

While such studies do indeed provide a baseline against which future impacts can be assessed there are significant gaps in the types of data being produced and within the data themselves. The most significant gap is in the taxonomy of the organisms encountered and sampled. Many of the organisms are new to science and so have not been formally classified. The result is that

each contractor develops their own taxonomy using a range of identifiers. This in turn results in a lack of standardisation between areas.

This is the third of the three workshops to standardize the taxonomy of fauna associated with deep seabed polymetallic nodules and other minerals. The “Workshop on Taxonomic Methods and Standardization of Meiofauna in the CCZ” is being hosted by the University of Ghent. For this workshop, all contractors are invited to participate as the meiofauna is the major constituent of the deep-sea benthos and prevalent among all habitats and minerals.

Objectives of the workshop:

The objective of this workshop is to bring together international deep-sea meiofauna experts with representatives of ISA contractors for the exploration for polymetallic nodules and other minerals in the Area to facilitate the establishment of a standardized taxonomy for the baseline studies of meiofauna associated with these resources. This will be achieved through:

1. the creation of a standardized nomenclature with associated descriptions and keys, to be made available on the web for the use by contractors;
2. the recommendation of a standardized taxonomic identification including sampling and storing methods for contractors;
3. the creation of a database of the locations where different species have been observed (including biogeographic variables), as it was started for the megafauna workshop, ultimately to create a faunal distribution atlas;
4. the provision of guidelines and procedures to be utilized by contractors, prospectors and the marine scientific researching community in applying the standardized nomenclature;
5. the collection of representative images for identified species;
6. the creation of an atlas of the locations where different species have been observed, and
7. a programme of work to address any gaps in knowledge or understanding.

Expected outcome from the workshop:

Upon completion of this third workshop, on “The Taxonomic Standardization on Deep-sea Meiofauna Associated with Polymetallic Nodules”, it is expected that the recommended standardized taxonomies for the megafauna, macrofauna and meiofauna as well as the guidelines and procedures to be utilized by contractors, prospectors and marine scientific researching organizations on the fauna associated with deep seabed minerals in the Area will be considered by the LTC with a view to making its own recommendations to the Council on taxonomies to use for such fauna. Contractor representatives have been requested to bring to the workshop the following information and data:

1. all ecological data of deep-sea meiofauna previously collected by the contractor in its exploration area (including density distributions of species in the area as well as lists of collected voucher specimens), and

2. preserved specimens –both classified and not-yet-identified– to work directly with the team of expert taxonomists for deep-sea meiofauna that will be present throughout the workshop. In a 15-to-20-min presentation, contractors have also been requested to outline the *status quo* of their macro faunal baseline studies to date, especially, whether the level of taxonomic identification at high resolution is being achieved, and if that is not yet the case, how long it is anticipated until taxonomic identification at high-level resolution will be attained. Furthermore, it would be desirable to learn, whether contractors seek collaboration to succeed in their faunal baseline studies.