



MODULE 3, LESSON 4

BIOLOGY OF COBALT-BEARING FERROMANGANESE CRUSTS

READING LIST

REQUIRED READING

Fukushima, T. (2004) Amount of Megabenthic Organisms in areas of Manganese Nodules, Cobalt-Rich Crust and Polymetallic Sulphides, In Workshop for the establishment of environmental baselines at deep seafloor cobalt-rich crusts and deep seabed polymetallic sulphides mine sites in the area, for the purpose of evaluating the likely effects of exploration and exploitation on the marine environment (ed. ISA: ISBN 978-976-95155-7-4). 356-371, International Seabed Authority, Kingston Jamaica, pp 481.

Beckmann, A. (2004) The physical environment of cobalt-rich ferromanganese crust deposits, the potential impact of exploration and mining on this environment, and data required to establish environmental baselines. In Workshop for the establishment of environmental baselines at deep seafloor cobalt-rich crusts and deep seabed polymetallic sulphides mine sites in the area, for the purpose of evaluating the likely effects of exploration and exploitation on the marine environment (ed. ISA: ISBN 978-976-95155-7-4). 227-256, International Seabed Authority, Kingston Jamaica, pp 481.

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Gage, J.D. and Tyler, P.A. (1991) Deep-Sea Biology: A natural history of organization at the deep-sea floor, Cambridge University Press, 504p. (ISBN-13-978-052-1336659)

International Seabed Authority (2000) Proceedings of Workshop on Minerals Other than Polymetallic Nodules of the International Seabed Area, ISA, 921p. (ISBN: 976-610-647-9 (pbk))

International Seabed Authority (2019) Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area (ISBA/25/LTC/6/Rev.3).

International Seabed Authority (2011) Fauna of Cobalt-Rich Ferromanganese Crust Seamounts, ISA, 92p. ISBN: 978-976-95268-7-7 (pbk)

Shirayama, Y., Itoh, H. and Fukushima, T. (2017). Recent Development in Environmental Impact Assessment regarding Mining of Deep-Sea Mineral Resources, Rahul Sharma (ed) In Deep-Sea Mining, Springer Switzerland, pp. 445-464. (ISBN-13-978-3-319-52556-3)

Pinet, P. R. (1996). Invitation to Oceanography (8th edition), Jones & Bartlett Learning, 598p. (ISBN-13: 978-1284164695).

Halbach, P. E., Jahn, A. and Cherkashov, G. (2017) Marine Co-Rich Ferromanganese Crust Deposit: description and formation, occurrences and distribution, estimated world -wide resources. In Deep-Sea Mining, Springer Switzerland, pp.65-143. (ISBN-13-978-3-319-52556-3)

OPTIONAL READING

Weaver, P. and Billett, D. (2019) Environmental Impacts of Nodule, Crust and Sulphide Mining: An Overview, In: Rahul Sharma (ed.), Environmental Issues of Deep-Sea Mining, Springer Nature Switzerland, pp. 27-62. (ISBN-13--978-3-030-12695-7)

Yamagishi, T. et al., (2019) Ecotoxicological Bioassay Using Marine Algae for Deep-Sea Mining, Environmental Issues of Deep-Sea Mining, Springer Nature Switzerland, pp. 255-274. (ISBN-13--978-3-030-12695-7)

Clark, M. (2019) The Development of Environmental Impact Assessments for Deep-Sea Mining, Environmental Issues of Deep-Sea Mining, Springer Nature Switzerland, pp. 447-470. (ISBN-13--978-3-030-12695-7)

Tilot, V. (2019) Assessment of Deep-Sea Faunal Communities-Indicators of Environmental Impact, In: Rahul Sharma (ed.), Environmental Issues of Deep-Sea Mining, Springer Nature Switzerland, pp. 147-190. (ISBN-13--978-3-030-12695-7)

Singh, P. and Hunter, J. (2019) Protection of the Marine Environment: The International and National Regulation of Deep Seabed Mining Activities, In: Rahul Sharma (ed.), Environmental Issues of Deep-Sea Mining, Springer Nature Switzerland, pp. 471-506. (ISBN-13--978-3-030-12695-7)

Mizell, K., et al., (2022) Estimates of Metals Contained in Abyssal Manganese Nodules and Ferromanganese Crusts in the Global Ocean Based on Regional Variations and Genetic Types of Nodules, In Perspectives on Deep-Sea Mining sustainability, technology, Environmental Policy and Management, Springer Switzerland, pp 53-80. (ISBN-978-3-030-8798-2)

Usui, A., et.al., (2022) Geological Characterization of Ferromanganese Crust Deposit in the NW Pacific Seamounts for Prudent Deep-Sea Mining, In Perspectives on Deep-Sea Mining sustainability, technology, Environmental Policy and Management, Springer Switzerland, pp 81-114. (ISBN-978-3-030-8798-2)

Morishita, Y., et.al., (2022) Secondary Ion Mass Spectrometry Microanalysis of Platinum in Hydrogenetic Ferromanganese Crusts, In Perspectives on Deep-Sea Mining sustainability, technology, Environmental Policy and Management, Springer Switzerland, pp 115-136. (ISBN-978-3-030-8798-2)

Radziejewska, T., et.al., (2022) Natural Variability Versus Anthropogenic Impacts on Deep-Sea Ecosystems of Importance for Deep-Sea Mining, In Perspectives on Deep-Sea Mining sustainability, technology, Environmental Policy and Management, Springer Switzerland, pp 281-312. (ISBN-978-3-030-8798-2)

Fukushima, T., et. al., (2022) Comprehensive Understanding of Seafloor Disturbance and Environmental Impact Scenarios, In Perspectives on Deep-Sea Mining sustainability, technology, Environmental Policy and Management, Springer Switzerland, pp 313-338. (ISBN-978-3-030-8798-2), *J. Sarrazin., R. Sharma., Y.J. Suh., J.B.*