

Promotion of sustainable quarry development in line with the Geopark principles

*Takuma Katori¹, Atsushi Matsuoka², Yu Iokawa³, Toshihiro Uchiyama⁴

1. Fossa Magna Museum, 2. Niigata University, 3. Joetsu University of Education, 4. Itoigawa City

1 Background

Itoigawa UNESCO Global Geopark is one of Japan's first regions designated as a Global Geopark in 2009. The Itoigawa-Shizuoka Tectonic Line, which splits the Japanese Archipelago geologically, crosses through the center of the territory; its western side characterized by older rocks including jade, Japan's national stone, while the eastern side contains newer rocks which filled up the Fossa Magna. The geological diversity of Itoigawa has nurtured rich ecosystems and culture.

Early Carboniferous to middle Permian limestone called Omi Limestone bodies are widely distributed around Mt. Kurohime in Itoigawa. Omi Limestone is a geological heritage of high academic value, recording the growth of Paleo-Pacific reef-type limestone and environmental changes over 80 million years. On the other hand, Omi Limestone is also actively quarried as a raw material for cement and carbide products, supporting industry and employment in Itoigawa for generations.

2 Academic Investigation Committee for new quarry development

In 2020, as operation in the current quarry is nearing its end, local quarry companies announced a joint development plan for a new quarry. The basic principles of geopark activities are to conserve geological heritage and realize a sustainable society. It is therefore hoped that efforts will be made to minimize environmental impact and conserve natural resources which will be lost will be surveyed and recorded. To that end, an academic investigation committee was newly established within the Itoigawa Geopark Council to deliberate on the validity of the results of the quarry's environmental impact assessment, as well as consider methods of investigation, recording, conservation, and the impact on the lives of local residents. The committee consists of experts such as university professors as well as landowners to deliberate the academic value of natural and cultural resources and the impact on the lives of residents. In addition, related national ministries, agencies and prefectural departments participated as observers. Under this system, from 2020 to 2022, we held several field surveys and committee meetings. In addition, in order to more widely engage local residents, we held resident briefings several times. As a result, we were able to discuss the environmental impact and value of the quarry site academically and we were able to establish the specifications and system of the research for reducing the environmental impact and recording the lost resources. To continue these research activities, we established a successor committee in 2022. In addition, agreements have been concluded among local governments, local residents, and developers so that these activities can be continued perpetually.

3 Sustainable quarry development in line with Geopark principles

One means of balancing conservation and development of local resources is to draw a line between areas to be conserved and areas to be developed based on their academic value. While this method is clear, it has the potential to create a division between the conservation side and the development side. In order to make effective use of limited natural resources and minimize the associated impact for the environment, it is necessary to have opportunities for all stakeholders in the region to sit at the same table. In this presentation, we will introduce the activities of the academic committee and present the expected results of quarry development in the geopark area and the research scheme (layered records) of local resources that will become clear as the development progresses.

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