

## **Significance of beachcombing and fossil collection for geoscience education on coastal geosites: a case study of the Ishikari Ecomuseum Area, Hokkaido, Japan**

AKIHIKO SUZUKI<sup>1</sup>, KENJI SHIGA<sup>2</sup>, TAKAFUMI ENYA<sup>3</sup>, NAOYA NOMURA<sup>1</sup>, AND SATOSHI OKAMURA<sup>1</sup> - 1. *Department of Earth Science, Sapporo Campus, Hokkaido University of Education, 5-3-1 Ainosato, Kita-ku, Sapporo, Hokkaido 002-8520, Japan <suzuki.akihiro@s.hokkyodai.ac.jp>*  
¶2. *Ishikari Local Museum, 30-4 Benten-cho, Ishikari, Hokkaido 061-3372, Japan* ¶3. *Historical Museum of Hokkaido, 53-2 Konopporo, Atsubetsu-cho, Atsubetsu-ku, Sapporo, Hokkaido 004-0006, Japan*

The Ishikari area is located on the Japan Sea-side of Hokkaido in northern Japan. The area, which is characterized by long sandy beaches in the south and rugged rocky shores in the north, has tentatively been designated part of the Ishikari Ecomuseum Area as it contains several unique geosites along the coast. Preliminary studies, geosite observations, fossil collection, and beachcombing are all useful techniques for beginners and students to familiarize themselves with the fundamentals of geoscience education. At the rocky shore geosites, Neogene marine sequences containing exposed molluscan fossils can be seen in the steep cliffs. The age and paleoenvironment of these sequences have been clarified based on molluscan paleontology and diatom biostratigraphy, illustrating the importance of fossil collection for understanding the taphonomy and paleoecology of molluscan fauna in relation to environmental changes in the Paleo-Japan Sea. Two characteristic molluscan fauna are recognized in the area, one is the cold-water shallow marine fauna from the Bannosawa Formation (10 Ma) and the other is the chemosynthetic cold-seep fauna from the Morai Formation (8 Ma). In pocket beaches between rocky headlands, numerous pebbles (rocks, minerals and fossils), extant shells (bivalves, gastropods and paper nautilus), and bones can be collected by beachcombing without a hammer. The pebbles that are washed ashore are primarily composed of red chert and black shale (Cretaceous), coal and amber (Paleogene), agate and quartz (Neogene), concretions with fossils (Miocene), pumice stone (Pleistocene), etc., which vary depending on their origin. These finds also illustrate the geohistory of the Ishikari area over the last 100 Ma. Consequently, beachcombing at coastal geosites is considered to be an effective method for geoscience education as the activity is safe for beginners. Further, since sample collection can be performed without a hammer, the geosite itself is not damaged.

Presented in Theme 3