

Potential of the Shimamori Basin Geosite, Sanriku Geopark, as a Disaster Education Site

—A Preliminary Study toward UNESCO Global Geopark Registration —

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1. Introduction

The Shimamori Basin (Fig. 1) is an inland basin surrounded by hills and drained by the Niida River. The surrounding landforms and fluvial processes provide opportunities to learn about geological features, while the rural landscape (Photo 1) composed of satoyama woodlands, orchards, and rice paddies supports diverse ecosystems. Spring water is observed in many places within the basin. Jomon archaeological sites are distributed along the surrounding slopes, and traces of medieval rice paddies have also been identified. In addition, forty-eight shrines are distributed throughout the basin, suggesting cultural landscapes associated with springs and traditional land use.

Upstream along the Niida River lies Yomasari Dam, completed in 2004, which was expected to mitigate floods and river overflows. Before the dam was built, inland flooding occasionally occurred within the basin, but such events have rarely been observed since its completion. However, the 2024 revision of the Hachinohe City Shimamori District Flood Hazard Map indicates that inundation depths of 10-20 meters could potentially occur across the basin.

This study examined the potential of the Shimamori Basin as a site for disaster education, focusing on its landforms, water environment, cultural landscape, and the history of local development.

2. Discussion

The following points were examined.

(1) Potential as a site for disaster prevention education

The Shimamori Basin is of a scale that allows its overall topography to be readily grasped from many vantage points. The relationship between the Niida River, which flows through the basin, the surrounding traditional rural landscape, and the settlements is clear, making disaster-related features easy to understand.

(2) Enhancing disaster resilience

Old settlements are located on river terraces to avoid flood damage. There are many shrines and small sanctuaries relative to the number of households, and cultural topics such as folklore and history are abundant, making it possible to explain disaster prevention in relation to local traditions and everyday life.

(3) Visitor safety and security

Flood and sediment-disaster hazard maps have been prepared and made public. In addition, there is little difference in elevation within the basin, and evacuation signs are installed. Announcements, warnings, and other alerts are provided through village broadcasts.

3. Conclusion

The following three proposals are presented.

(1) Proposal for a Geo-Disaster-Prevention Walk

A walking course linking natural springs, 48 shrines, and disaster-prevention signs has been established, and a map has been created. Participants can use hazard maps to check the disaster risks associated with

their current location. As they walk, they can consider evacuation routes and check the time required and the safety of the surrounding areas. This makes it possible to visualise and share disaster risks.

(2) Creation of a Geo-Kamishibai

Folktales as local knowledge play a role in conveying past events and their lessons. The folktale “The Forty-Eight Shrines of Shimamori” tells how the deities of Shimamori cooperated to prevent “Hachi no Taro” from turning the basin into a lake. According to the current flood hazard map, an inundation depth of 11 meters would turn the basin into a lake-like state. In addition, a relationship between the legend of “Hachi no Taro” and the eruption of Towada Volcano has been reported, suggesting disaster risks other than heavy rainfall.

Based on this, a Geo-Kamishibai titled “Hachi no Taro and the Forty-Eight Shrines of Shimamori” was created. By linking the folktale with the hazard map, disasters become more realistic and awareness of disaster prevention is heightened.

(3) Cooperation with community development organizations

We would like to carry out a Geo-Disaster-Prevention Walk in cooperation with various community development organizations and utilize the Geo-Kamishibai in the program. By using the Geo-Kamishibai in the post-walk review, it is possible to enhance awareness of disaster prevention and disaster resilience. By linking landforms, flood risks, and local traditional knowledge, this study showed the potential to enhance local disaster resilience while enabling visitors to understand the geosite safely and securely through learning.

This study showed the potential for incorporating floods into geoscience learning. We hope to further develop this approach toward UNESCO Global Geopark registration.

Keywords: disaster prevention, floods, evacuation behavior, disaster resilience, local knowledge, traditional knowledge

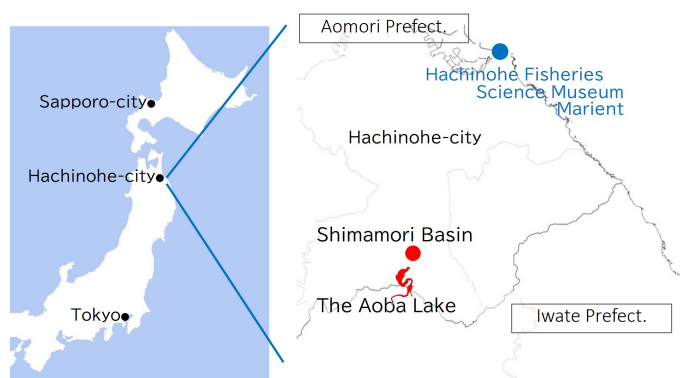


Figure 1: Location of the Shimamori Basin



Photo 1: A view of the Shimamori Basin