

Conservation strategies for ecosystem and strata outcrops in Amakusa Goshoura Geopark

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A variety of flora and fauna fossils including those of several species of dinosaur are contained within strata in the Goshoura area of Amakusa, Kumamoto Prefecture. Goshoura town constructed a fossil-hunting place, a fossil park and "Ammonite House"(a structure built to protect and preserve a rare ammonite fossil) among others creating a field museum according to the "Whole Goshoura Museum Plan". There are more than 30 geosites in Amakusa Goshoura Geopark which are maintained in thriving conditions. We would like to show some examples for conservation of strata and ecosystems from these geosites.

"The Sphenoceras Wall" is an example of one geosite conservation strategy for strata and fossils. There are many bivalve fossils of Sphenoceras accompanied by many trace fossils on a bedding plane of shale stratum of the Himenoura Group of the upper Cretaceous period in Makishima. The outcrop was initially covered by wire netting to prevent erosion of this outcrop, but the netting eventually corroded and deteriorated leaving the outcrop and its fossil content exposed and immediately visible. Safe, public access to the site is made possible by a series of steps descending to the outcrop where ongoing scientific research can be observed. It is proposed that this site should be categorized as a geosite once research has finished in order to conserve its present condition and promote public interest.

Another example of conservation strategy of a geosite in Goshoura Geopark is the Ammonite House, which is a structure built at the request of local citizens to protect the largest ammonite fossil found in Kyushu (approx. 60cm in diameter) from being destroyed during the construction of a new road along the coast.

Around the Ammonite House, black shale of the upper Cretaceous Himenoura Group crops out and is visible. *Tsumerenge* (*Orostachya japonica*); a near threatened species (NT) grows naturally on debris sediments from the outcrop walls under sunny and less humid conditions. *Kurotsubame-shijimi* (*Tongeia fischeri shojii*); a near threatened species (NT) of butterfly, thrives on the *tsumerenge* leaves as a food source.

Ammonite House and its surrounding area are general geosites belonging to the Makishima course of Goshoura Geopark. Conservation and protection of many geo-significant aspects of the area including outcrops, flora and fauna is undertaken by the museum staffs and Goshoura tourism guides. These steps include the removal of grass and shrubs that naturally grow in the outcrop areas as well as the observation spots for *Tsumerenge* and *Kurotsubame-shijimi*.

Without careful implementation of conservation strategies at Amakusa Goshoura Geopark, the richness found within the surrounding ecosystem would be lost to future generations.

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