

# The Plant Geographic Characteristics and Conservation Measures of An Arctic-Alpine Species, *Empetrum nigrum* var. *japonicum* in Mt. Halla

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*Empetrum nigrum* var. *japonicum* is a variety of *E. nigrum* belonging to *Empetrum* which consists of six different species, i.e. *E. nigrum*, *E. rubrum*, *E. eamesii*, *E. atropurpureum*, *E. hermaphroditum*, and *E. purpureum*. *Empetrum* is one of the genera of Empetraceae that consists of three genera, *Corema*, *Ceratiola* and *Empetrum*.

This species, an arctic-alpine plant, distributes in Alaska, Kamchatka, East Siberia, Sakhalin, Japan, Manchuria and the northernmost in Korean peninsula, Hamgeongbuk-do and Hamgeongnam-do. Mt. Halla is the only region beyond the southern distribution limit. It is considered to be locally extinct or reduced its habitats due to the direct impacts such as the frequent wildfire, uprising underground water level, excessive growth of trees, damage from recreation activity, increasing invasive species and accumulation of heavy metals, and indirect impacts such as global warming.

To cope with these impacts, conservation measures are prepared in the nation and/or state level in some countries like United States, Canada and China. Considering of present distributions and characters of fossils including pollens, this is regarded as a relic species of the Ice Age. It, therefore, is important a species to investigate the phytogeography. It is valuable for not only paleobotany and paleoecology but also for giving clues of vegetation reconstruction and expectation of ecological changes to global warming.

In addition, it provides useful information for the ecological management and conservation measures of forest genetic resources. Since Mt. Halla is the southern distribution limit and geographically isolated region of *E. nigrum* var. *japonicum*, and threatened to be extinct because of various impacts such as global warming, conservation measures must be taken as soon as possible.