

***Abies* species in Japan, and natural stands and plantations of *A. sachalinensis* in Hokkaido**

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Japanese forests extend from the sub-tropical zone to the transition zone between the cool-temperate and boreal zones. In southern Japan, evergreen broadleaved trees dominate, while deciduous broadleaved trees and conifers dominate in northern Japan. Five *Abies* tree species are native to Japan: *A. firma*, *A. mariesii*, *A. veitchii*, *A. homolepis* and *A. sachalinensis*. The four species other than *A. sachalinensis* are distributed on Honshu, Shikoku and Kyushu Islands, while *A. sachalinensis* occurs in Hokkaido (Fig. 1). *A. firma* has the largest distribution among Japanese *Abies* species, and *A. sachalinensis* occurs throughout Hokkaido at altitudes up to 1000 m. The other species occur mainly in subalpine zone. Japanese *Abies* species occur in mixed stands. Natural forests in central Japan consisting of *A. veitchii* and *A. mariesii* have peculiar stand dynamics involving a wave-regeneration. In winter in the Tohoku region, in northeastern Japan, unique snow-ice ‘monsters’ develop (Photo. 1). While *A. sachalinensis* is an important plantation species in Hokkaido, the other species are generally not used for plantations.

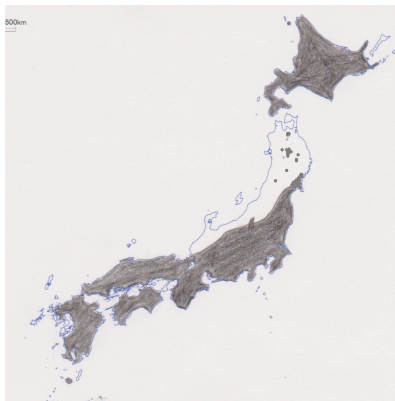


Fig. 1. The distribution of *Abies* species in Japan.



Photo. 1. A snow-ice ‘monster’ involving *Abies* trees.

In Sapporo, for 1981–2010, annual mean temperature was 8.9 °C and mean precipitation was 1107 mm. The monthly mean temperature ranges from -3.6 to 22.3 °C. The forest zone in Hokkaido is a transition zone between cool-temperate and boreal zones, and the major forest type comprises mixed stands of deciduous broadleaved trees and evergreen conifers. *Abies sachalinensis* is an important species in natural forests and plantations in Hokkaido, and attains 60–70 cm in DBH and 30–35 m in height. In natural forests, *A. sachalinensis* lives 150–200 years. *A. sachalinensis* is an important member of natural mixed stands. The stocked volume of *A. sachalinensis* accounts for 29 % of the total volume in Hokkaido. *A. sachalinensis* is a shade-tolerant species and its growth in natural stands depends on canopy gaps. In Hokkaido, there are about 771,000 ha of *A. sachalinensis* plantations, which accounts for 52 % of the total plantation area. The typical stand age at the final cutting of *A. sachalinensis* plantations is 50–60 years. The wood of *A. sachalinensis* is used for construction, paper, plywood and laminated wood. In Hokkaido, root and butt rot damage are serious problems in *Abies* plantations and 26 % of the trees are rotted. More than 10 root and butt rot fungi occur in *Abies* plantations in Hokkaido, and cause large economical losses to forest owners. However, no disease control is currently available in Hokkaido.