

1. Natural Environment of Japan

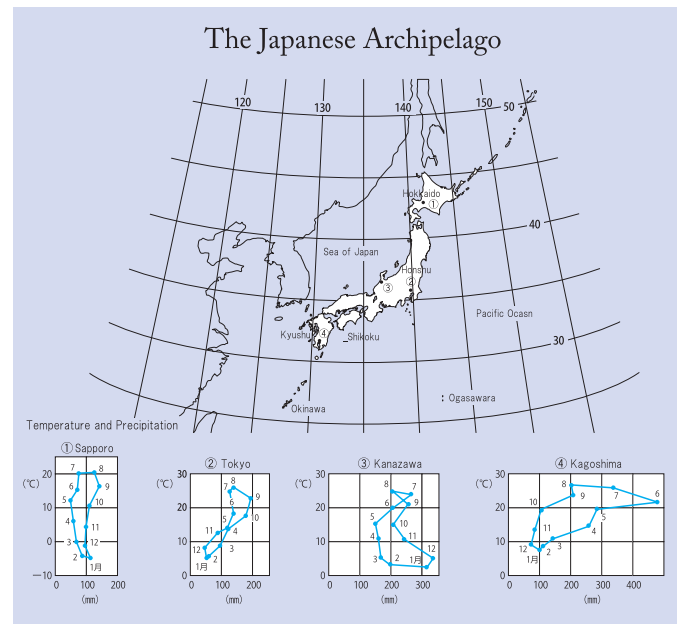
1.1 Overview of the Japanese Archipelago

Japan is situated to the east of the Eurasian Continent, its crescent-shaped archipelago extending parallel to the continent across the Sea of Japan. The total land area is approximately 380,000 km², and the islands stretch nearly 3,000 km from north to south, with climates ranging from sub-arctic to sub-tropical.

The Japanese Archipelago lies on one of the newest diastrophism belts in the world, and a wide variety of geological phenomena are observed. The topography of the islands is extremely varied, with mountainous areas, including volcanoes and hills, occupying almost three quarters of the total land area. Most of the mountains are steep, separated by narrow river valleys, and hills connect the mountains to low-lying plains. Most of the plains and basins are small, formed by sedimentation along rivers, and are scattered beside coastal areas and between mountains.

Seasonal winds are influential in defining Japan's four distinct seasons. Precipitation in Japan is above the world average due to rains in summer and autumn and heavy snows in winter. Honshu, the biggest of the main islands, has a range of mountains along its spine, creating a clear difference between weather on the Pacific Ocean side and the Sea of Japan side. In winter, for example, it is relatively dry on the former, while it snows heavily on the latter.

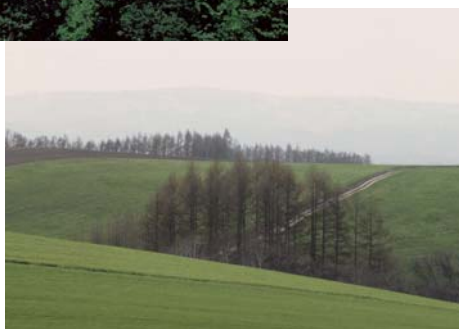
As mentioned above, the wide range of climates from north to south and the variations in topography result in a diverse natural environment across the Japanese Archipelago.



1.2 General Information on Land Use

Forests cover most of Japan's hills and mountains, and some 66% of the nation is forested. Farmland occupies about 13%. These two make up almost 80% of the country.

Urban areas cover some 5%, and grassland accounts for approximately 1%.



1.3 Vegetation

Vegetation can be seen as a consequence of adaptations by plants, through interaction with the site's climate, geographical history, geology, topography and other forms of life including humans. Therefore, by observing vegetation in detail, we can identify the characteristics of a local environment.

In the absence of human activity, forests would be the natural vegetation in most cases under Japanese climates. Broad-leaved evergreen forests, deciduous broad-leaved forests and evergreen coniferous forests are distributed, belt-like, across climatic zones from north to south, and altitudes from low to high (horizontal and vertical distribution).

In addition, specific plant life is found in particular locations with unique conditions of soil and water, such as wetlands, dunes and mangrove forests. Japan's considerable extension from north to south and its various natural circumstances offer the potential for highly diverse natural vegetation. Actual vegetation is even more diverse, as plant communities created through natural and human disturbances (substitutional vegetation) have replaced most of the original vegetation.

By 1989, the Ministry of the Environment had prepared actual vegetation maps (1:50,000 scale) (*1) in order to identify the current status of this diverse vegetation and to use the outcome as a basic information map of the natural environment.

The actual vegetation maps (:50,000 scale), revised after the 5th National Surveys on the Natural Environment (see, sec. 5.2) to reflect changes in plant life, show that "natural vegetation" (natural forest (17.9%) and grassland) covers only 19.0% of Japan's total land area.

The rest of the vegetation types include secondary forests (23.9%), plantations (24.8%), secondary grassland (3.6%), farmland (including rural residential areas) (22.9%), urban (4.3%) and others (including open water areas)(1.5%). (*2) Natural vegetation is distributed in areas with little human activity, such as steep mountains, peninsulas and isolated islands. On the other hand, plains and hills are covered at a higher rate with substitutional vegetation such as secondary forests and grasslands, plantations and farmlands.

(*1) In 1999, the Ministry of the Environment started to renew all actual vegetation maps on a 1:25,000 scale.

(*2) These percentages do not necessarily indicate the percentages of real land areas of each vegetation type. The vegetation covering the most area within a circle of 250-meter diameter in the center of each standard grid (about 1 x 1 km) is represented as the vegetation type of that grid. Each percentage, therefore, shows a ratio of the number of grids represented by each vegetation type to the total number of grids.



1.4 Fauna and Flora

Despite its small land area, Japan is blessed with rich and diverse fauna and flora. Some 7,000 species of vascular plants, more than 1,000 species of vertebrates, and 70,000 100,000 species of insects inhabit Japan's 380,000 km². The ratio of endemic species is high, with many species of small mammals, reptiles and amphibians, and one third of all plants considered endemic to Japan.

On the Ogasawara Islands, endemic species or sub-species comprise 40% of higher plants, most terrestrial birds, and three quarters of the terrestrial mollusks. On the Nansei Islands, there are unique species that have very few closely related species elsewhere. Therefore, islands of this kind are home to very unique fauna and flora, and attract a great deal of attention.



Ishikawa's frog
(*Rana ishikawae*)



Japanese serow
(*Capricornis crispus*)



Greater pied kingfisher
(*Geryle lugubris*)



Naniwa's darter
(*Sympetrum maculatum*)

These rich, diverse and characteristic fauna and flora have various backgrounds. First, the Japanese archipelago has unique geographical conditions, stretching more than 20 degrees both in latitude and longitude along the edge of the Eurasian continent. Second, species interacted with and were subsequently isolated from other species during the emergence and submergence of land caused by glacial activity during the Quarternary period in the Cenozoic era.

Third, the country has various topographical features, including wide altitudinal ranges, coupled with a full variety of weather conditions influenced by the monsoon.

A wide variety of more recent human pressures, however, have caused the natural environment to suffer dramatic changes. Distributions of some species and local populations have been fragmented and reduced, and in the worst cases driven to extinction.

1.5 Actual Vegetation Map

The actual vegetation map is important as a diagnostic map of nature for deciding national land planning, regional development and industrial location. It's also important basic map as the ecological prescription of the conservation, restoration and maintenance of natural environment and it is highly regarded as an indispensable materials for making various master plans of conservation and/or development. The Ministry of the Environment grasps the current state of vegetation of the whole country, and makes the actual vegetation map available nationwide since it has the important roles mentioned above.

From the sixth vegetation survey onward, the vegetation map has been undergoing complete revision. Besides that, the ministry anticipates an increase in users of the map due to the enforcement of environmental impact assessment law. Therefore, we have changed its contraction scale from the former 1 / 50,000 to 1 / 25,000 to make it a large-scale map, and have been improving the original map. In the meantime, a project is underway to input the vegetation map data to the GIS database.

