

The Japanese Archipelago and its Nature

The Japanese Archipelago is a narrow island chain in the east of the Eurasian continent, spanning approximately 3,000km from north to south in parallel with the continent and separated from it by the Japan Sea. Japan has a national land area of 37.8 million ha, consists of four major islands, Hokkaido, Honshu, Shikoku and Kyushu, and more than 6,000 islands surrounding them. The geography of Japan is diverse with mountain ranges as high as 3,000m, a coastline approximately 30,000km in total, and many rivers and streams that flow down the steep slopes. Forests cover approximately 25 million ha, or 67% of the total land area of Japan, and most of them are found in mountainous areas. The slopes of mountains are generally steep and carved by intricate ravines and gorges. Most plains and basins are small in size and scattered among mountains and hills or along the coasts. Many of them were formed by sediments from the rivers.

Spanning across wide climatic zones from subtropical to subarctic, the average precipitation of most of the area in Japan exceeds 1,000mm per annum, and the climate is humid with a strong monsoon and four distinct seasons of spring, summer, autumn and winter.

Reflecting such natural conditions, land use in Japan is quite complex. For instance, most mountains and hilly areas are covered by forests with some parts used as pastures and orchards. Flatlands including plateaus, terraces and plains are used for agriculture or residence. Rice paddies dominate the plains except for sprawling urban areas.

In such a country where there is a rich growth of all forms of life, the Japanese have nurtured a culture to live in accordance with the changes of four seasons. Also, while being constantly forced to face natural disasters such as earthquakes, floods and volcanic eruptions, the Japanese have acclimated to nature instead of controlling it, and cultivated wide-ranging knowledge, skill, art, sensitivity and a sense of beauty.

Japan's biodiversity has been shaped by the climate, intricate land use, and traditional view of nature fostered in each region that focused on living in harmony with nature. Approximately 69,000 wild species (160 species of mammals, 700 species of birds, 32,000 species of insects, 7,000 species of vascular plants, etc.) including many endemic ones have been identified in Japan.

On the other hand, human interventions and the changing lifestyle induced by rapid urbanization during the period of high economic growth has exerted great pressure on the natural landscapes and the biota in Japan. As a result, quite a few animal and plant species are threatened with extinction.

Characteristics of Wetlands in Japan

Because of the large amount of precipitation and the surrounding oceans, Japan is a country blessed with water. Consequently, diverse forms of wetlands are found within its small land area, including marshlands, rivers, ponds, lakes, sandy beaches, tidal flats, coral reefs, mangrove forests, seagrass/seaweed beds, rice paddies, reservoirs, springs and underground water systems, each of which supports local biodiversity.

Marshlands:

In the field of soil science, marshlands are known as peatlands. These can be broadly classified into high moors (bog) which are rich in plant species such as sphagnum that are sustained only by nutrient-poor rainfall, low moors (fen) where reeds and sedge thrive enriched with nutrient salts from upper streams, and intermediate moors characterized by colonies of plants such as *Moliniopsis japonica*.

Because low moors are easily affected by development activities in the surrounding area, most of them at lower altitudes in Honshu and further south have long before been converted into rice paddies and residential areas.

Intermediate moors are mainly found in cooler areas, distributed widely as south as Yakushima Island, Kagoshima Prefecture.

Most of the high moors are found in the Chubu mountain region in Honshu as well as in Hokkaido, and provide important habitats for relict wild species of the Glacial Age.

Rivers:

Japan has approximately 109 principal river systems encompassing about 14,000 rivers. Because of the mountainous topography, most rivers in Japan are short in length, and travel down steep inclines to the ocean. As the water of the rivers rise at once when there is a heavy rainfall in the upper streams, it often results in floods, flood control is the greatest challenge for river basin management in Japan. Out of the 113 major rivers in Japan, very few retain their natural state with no artificial construction such as dams and weirs. Most of the riverbanks are covered by artificial embankments and the habitat environments for aquatic species are increasingly degraded every year.

Freshwater Lakes and Ponds:

Various types of lakes and ponds are scattered throughout the country. Some are in mountainous areas, while others lie in the plains or near the coast, such as the lakes which used to be a part of the sea and were left behind when the sea retreated. There are also numbers of artificial reservoirs constructed and managed as water sources for rice paddy

irrigation. Many of them are the habitats for migratory water birds such as ducks, geese and swans as well as for freshwater fish, plants, and insects such as dragonflies.

Rice Paddies:

Rice paddies cover 2.5 million ha out of 37.8 million ha total land area in Japan. Rice cultivation has been the principal source of livelihood in Japan since ancient times. Rice paddies and the surrounding environment such as channels and reservoirs, and SATOYAMA that mainly have broad-leaved deciduous forests, mainly form secondary natural environments in Japan. This sort of secondary natural environment has been a rich repository of biodiversity maintained by moderate human disturbances such as undergrowth clearing and pond dredging, both of which have been conducted in people's daily lives. However, recently there is a problem that this balance is beginning to be lost because of the changing lifestyle.

Rice paddies are areas for food production as well as important feeding and stopover sites for migratory birds such as shorebirds, ducks, geese and swans. In addition, rice paddies provide vital habitats for aquatic species such as fish and insects.

At the COP10 in 2008, Japan and Korea jointly proposed a draft resolution on enhancing biodiversity in rice paddies as wetland systems, which was adopted unanimously.

Groundwater Systems:

The wetland types recognized by the Ramsar Convention include subterranean karst topography and underground water systems formed in limestone areas. Japan also has this type of wetland which is designated as a Ramsar site.

Coastlines:

Japan consists of over 6,000 islands and the total length of the coastline reaches 32,800km, of which 53.1% is natural coastline which retains natural condition with no artificial modification. However, artificial modification of the coastlines is progressing rapidly. Approximately 1,300km of natural coastline has been lost by artificial modification in the 20 years after 1978. In the main islands of Hokkaido, Honshu, Shikoku and Kyushu, natural coastline represents only 42.3% of the total, which is less than half. Some of the remaining natural coasts have important roles as habitats for rare dragonfly species that spawn and grow only in tidal wetlands and for sea turtles as their spawning grounds.

Brackish Lakes:

There are a number of coastal lagoons in Japan and many of them are brackish, being linked to the sea. Often being the final depository of organic matters (nutrient salts etc.) from rivers, the brackish water areas are highly