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The Japanese Archipelago and its Nature

The Japanese Archipelago is a narrow island chain to the east of the Eurasian continent, spanning approximately 3,000kms from north to south. Running parallel to the continent, it is separated by the Japan Sea. Japan has a national land area of 37.8 million ha, and consists of four major islands: Hokkaido, Honshu, Shikoku and Kyushu. These are again surrounded by over 6,000 islands. Japan's geography is diverse, with mountain ranges as high as 3,000m, a coastline measuring approximately 30,000kms in total, and many rivers and streams flowing down its steep slopes. Forests cover approximately 25 million ha, or 67% of its total land area. The mountain slopes 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-ranging climatic zones, from the sub-tropical to sub-arctic, the average precipitation in most of Japan exceeds 1,000mm per annum. The climate is humid, with vigorous monsoons, and four distinct seasons: spring, summer, autumn, and winter.

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

In such a country, where all forms of life experience rich growth, the Japanese have nurtured a culture of living in accordance with four seasons. Moreover, due to constantly being confronted by natural disasters like earthquakes, floods and volcanic eruptions, the Japanese have acclimated to nature instead of controlling it, by cultivating wide-ranging knowledge, skills, art forms, sensitivities and a sense of beauty.

Japan's biodiversity is shaped by its climate, intricate land use, and traditional view of nature that is fostered in each region, with focus 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 species, have been identified in Japan.

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

Characteristics of Japanese Wetlands

Due to the extensive precipitation and surrounding oceans, Japan is a country blessed with water. Consequently, there are diverse forms of wetlands regardless of 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 these supports local biodiversity.

Marshlands:

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

Since the low moors are easily affected by developmental activities in their surrounding areas, those at lower altitudes in Honshu and further south have long been converted into rice paddies and residential areas. Intermediate moors are primarily found in cooler areas, widely distributed as far south as Yakushima Island in Kagoshima Prefecture. Most of the high moors are in the Chubu mountain region in Honshu, as well as in Hokkaido, and serve as 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 of Japan's rivers are short in length, and travel down steep inclines to reach the ocean. When there is heavy rainfall in the upper streams, the river waters rise at once, often resulting in floods. Thus, flood control is the greatest challenge for the river basin management in Japan. Of the 113 major rivers in Japan, very few have retained their natural state, that is, without any artificial construction like dams or weirs. Most of the riverbanks are covered by artificial embankments, and

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the habitat environments for aquatic species are increasingly degrading with each year.

Freshwater Lakes and Ponds:

Various types of lakes and ponds are scattered throughout the country. Some are in the mountainous areas, while others lie in the plains or near the coast, such as those lakes which used to be a part of the sea and were left behind when the sea retreated. There are also quite a few artificial reservoirs, constructed and managed as water sources for rice paddy irrigation. Many of them serve as habitats for migratory water birds like ducks, geese and swans, as well as for freshwater fish, plants, and insects like dragonflies.

Rice Paddies:

Rice paddies cover approximately 2.35 million ha of Japan's total land area of 37.8 million ha. Ever since ancient times, rice cultivation has been the principal source of livelihood in Japan. Japan's secondary natural environments are mainly formed by rice paddies and their surrounding environment, comprised of channels and reservoirs, and SATOYAMA, comprised primarily of broad-leaved deciduous forests. These sorts of secondary natural environment are a rich repository of biodiversity, and are maintained by moderate human interventions such as undergrowth clearing and pond dredging, both of which are part of people's daily lives. However, recently, there have been problems caused by the loss of this balance because of changing lifestyles.

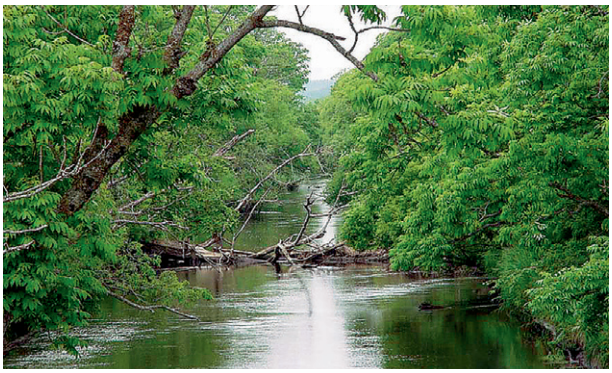
While rice paddies are areas for food production, they also serve as important feeding and stopover sites for migratory birds like shorebirds, ducks, geese, and swans. In addition, they are vital habitats for aquatic species like fish, and insects. At the COP10 in 2008, Japan and Korea jointly proposed a draft resolution for 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 is also home to this type of wetland, whth some designated as Ramsar sites.

Coastlines:

Japan consists of over 6,000 islands, and the total length of its coastline reaches 32,800kms, 53.1% of which is natural coastline that has retained its natural condition, without artificial modification. However, the coastlines are being artificially modified rapidly. Approximately 1,300kms of the natural coastline has been lost to 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 play important roles as habitats for rare dragonfly species that spawn and grow only in tidal wetlands, and spawning ground for sea turtles.



Brackish Lakes:

There are a number of coastal lagoons in Japan, many of which are brackish and linked to the sea. Since these brackish lakes are often the final depository of organic matter (like nutrient salts) from rivers, they are highly productive because of their shallow water, and complex ecosystems that combine seawater and freshwater. They are also important for people, as nurseries of marine resources and coastal fishing grounds.

Seagrass/Seaweed Beds:

Seagrass/seaweed beds refer to coastal water bottoms with vast communities of seagrass, such as eelgrass, and seaweed, such as kelp and wakame. They perform functions like producing oxygen, purifying water, and stabilizing the sea-bottom environment. In addition, they are important as food sources for coastal species like fish and sea turtles, spawning sites, nursery grounds, and shelter. People in Japan have also benefited from using seagrass/seaweed beds as fishing grounds for a long period of time.

According to the 1994 Survey on Marine Organisms Environment (Seagrass/Seaweed Bed), Japan has a total of 200,000ha of seagrass/seaweed beds (including those exceeding 1ha in area) within its coastal waters, of less than 20m depth. Compared to the survey conducted in 1978, 6,400ha of seagrass/seaweed beds had been lost to environmental degradation through land reclamation and rocky-shore denudation. As these trends still continue, the conservation of seagrass/seaweed beds is a pressing issue. In addition, there are many reports of damages in the eelgrass bed at the innermost areas of the bay, caused by the tsunami due to the Great East Japan Earthquake of 2011. However, according to the report of the Ecosystems Monitoring Survey in the Pacific Coastal Areas of the Tohoku Region, communities in certain areas are recovering, for example, in the Matsushima Bay.

Tidal Flats:

According to the 1998 Seashore Survey, 49,380ha of tidal flats, exceeding 100m in width and 1ha in area during low tide, were identified. When tidal flats are repeatedly exposed and submerged, nutrient rich sediments from both rivers and seas get deposited there, building up a rich community of microorganisms and benthos. Of late, the water purification function of these organisms has begun attracting people's attention. Tidal flats are also indispensable as feeding and resting sites for shorebirds.

Due to the scarcity of flatlands, tidal flats tend to become targets of various development projects in Japan; consequently, approximately 6,000ha of tidal flats have disappeared in the 20 years after 1978. Some of the existing tidal flats are under threat from development even now.

Mangrove Forests:

According to the 1998 Seashore Survey, 95% of Japan's total 2,670ha of mangrove forests are in Okinawa Prefecture. Although most of these forests are small in size, a few of them exceed 100ha in area. Of the over 100 species of mangrove plants in the world, seven species belonging to four families have been identified in Japan.

Coral Reefs:

The total area of Japan's reef-building corals is approximately 35,350ha, most of which lies in the Nansei Islands, further south of the Tokara Archipelago in Kagoshima Prefecture. Its species diversity of reef-building corals is among the most outstanding in the world.

Ramsar Sites in Japan

Japan became a contracting party to the Ramsar Convention in 1980, and designated Kushiro Shitsugen as its first Ramsar site. The fifth Meeting of the Conference of the Contracting Parties (COP5) to the Ramsar Convention was held in Kushiro in 1993. This event aroused the interest of people in Japan and the rest of Asia in wetlands, raising widespread awareness of the Ramsar Convention's objectives.

Japan has been promoting the designation of additional wetlands, in accordance with the occasion of each COP. At COP13 held in the United Arab Emirates (UAE) in October 2018, two sites, Shizugawawan in Miyagi Prefecture and Kasai Marine Park in Tokyo, were designated as new Ramsar sites. In addition, the Izumi Wintering Habitat of Cranes in Kagoshima Prefecture was newly designated in November 2021, taking the total number of sites in Japan to 53. Wetlands are classified into 42 types by Annex I to the Resolution VIII.13 of the Ramsar Convention (See Appendix 3). Japan's wetlands have been designated as Ramsar sites mainly because they are important habitats for waterfowl; however, various types of wetlands like marshlands, lakes, ponds, lagoons, rice paddies, seagrass/seaweed beds, tidal flats, mangrove forests, coral reefs, and groundwater systems are also being designated, reflecting the diversity of Japan's wetland ecosystems.

The Ramsar Convention adopted the criteria and guidelines for identifying wetlands of international importance in Annex II to the Resolution VIII.13, and so forth (See Appendix 4). When selecting candidate wetlands for designation as Ramsar sites, Japan takes the following as prerequisites:

1. Meeting the criteria for identifying wetlands of international importance as set by the Ramsar Convention
2. Ensuring long-term conservation of the site through national legislation (Natural Parks Law, Wildlife Protection and Hunting Management Law, etc.)
3. Acquiring the consent and support of local communities

The Conservation and Wise Use of Wetlands

The Ramsar Convention promotes the conservation of wetlands of international importance, as well as the fauna and flora that inhabit and grow in these wetlands. Each Contracting Party designates wetlands of international importance within its territory, and registers them with the Secretariat of the Convention. It also sets protocols and measures to be taken by each Contracting Party to promote the conservation and wise use of wetlands. The wise use of wetlands implies maintenance of the wetland ecosystem, and sustainable use of the bounty that they provide. Japan has a culture of symbiosis between humans and nature that has been nurtured since ancient times, rather than the domination of nature by humans. There are many historical examples of the "wise use" of wetlands in the culture and traditional activities in agriculture (rice farming, dairy farming, etc.), fisheries (fish catching, aquaculture, etc.), and prevalence of local rules for hunting in wetlands. In recent years, wetlands have been used for tourism. Ecotourism and wildlife tours have been increasingly popular, promoting the community development and the wise use of wetlands.

Policies for Wetland Conservation:

The "National Biodiversity Strategy of Japan, 2012–2020" describes the conservation and restoration of wetland ecosystems by conducting nature restoration projects; reviewing the Important Wetlands in Japan; providing information for the conservation areas that need to be designated as protected areas; designating wildlife protection areas and Ramsar Sites; and outlining the ecological changes and conservation status of important wetlands in Japan. The specific measures for Ramsar Sites include: updating the Ramsar Information Sheet and considering the expansion of the designated area, undertaking surveys and information administration in the wetlands, promoting wetland restoration efforts, supporting conservation and wise use planning of wetlands, and introducing and disseminating case studies on the wise use of wetlands. Moreover, the formulation of the next National Biodiversity Strategy is in progress for 2023.

Laws for Natural Environment Conservation:

Legislations for nature conservation and wildlife protection in Japan include the Basic Environment Law, Basic Act on Biodiversity, Nature Conservation Law, Natural Parks Law, Law for the Protection of Cultural Properties, Wildlife Protection and Hunting Management Law, Law for the Conservation of Endangered Species of Wild Fauna and Flora, Law for the Promotion of Nature Restoration, and Invasive Alien Species Act. Some laws regulate developmental activities and resource exploitation with a focus on specific species and/or specific areas, while others promote the restoration of lost natural environments. Many wetlands and their species are covered under these laws.

Diverse Stakeholder Participation and Awareness Raising:

Japanese municipalities with Ramsar sites form a network called the "Domestic Committee for Ramsar Sites related Municipalities in Japan." They conduct regular meetings for promoting local level wetland conservation activities, and contribute to the appropriate management of Ramsar sites by encouraging information exchange and cooperation between cities, towns and villages. At the prefecture level, several prefectures include wetlands in their designation of conservation areas as wildlife protection areas, nature conservation areas and natural parks, and/or formulate their own environmental legislations and projects for wetlands.

The conservation and wise use of wetlands cannot be achieved without the understanding and participation of local people who live near these wetlands. Many Ramsar sites in Japan serve as examples of cooperation and collaboration among various stakeholders promoting local-level activities.

International Cooperation

International cooperation, by sharing experiences and technologies, is vital for meeting the goals of conservation and wise use of

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wetlands. Japan is engaged in various international cooperation activities, to make active contributions as a developed Asian country. The following are some examples of international cooperation activities by Japan.

Financial Assistance and Technology Transfer for the Conservation of Wetlands:

The Japan International Cooperation Agency (JICA) invites participants from developing countries for training courses on the conservation and wise use of wetlands. In addition, Japan has been carrying out several technology transfer projects for the conservation and sustainable use of wetland ecosystems in countries like Iran, Uganda, and Malaysia. As for financial assistance, the Ministry of Foreign Affairs of Japan supports various programs targeting wetlands' conservation in Asia through voluntary contributions to the Ramsar Small Grants Fund. The Nagao Natural Environment Foundation supports developing countries in the Asia and Oceania regions on small-scale projects.

Wetland Surveys and Information Exchanges:

A number of wetlands in Southeast Asia are important as wintering and stopover sites for migratory birds from the East Asian and Australian regions, including wetlands in Japan. However, these are rapidly degrading and disappearing due to development-related economic growth. The Ministry of Environment has been providing support for surveys of wetlands, and improvement of wetland management capacity in Southeast Asian countries for more than 30 years, since 1989. The Ministry organized surveys and workshops in Myanmar for compiling a national inventory of its important wetlands, which subsequently led to Myanmar's entry into the Ramsar Convention. In addition, the Ministry has supported the designation of Ramsar sites and related works in Malaysia, Vietnam, Thailand, and Cambodia.

Japan's Ministry of Environment has also provided support for the Asian Wetlands Symposium, a forum where diverse actors including governments, NGOs, experts, businesses and local residents can share their knowledge and experience of the conservation and wise use of wetlands in Asia, and avail opportunities for learning. Japan proposed a draft resolution for encouraging and instructing the promotion of regional scientific and technical fora at the "Asian Wetland Symposium", and the draft was adopted at COP9 as Resolution IX.19 (see Appendix 2).

Bilateral Efforts for the Conservation of Migratory Birds:

Japan has signed bilateral conventions/agreements for migratory bird conservation with four countries: the United States, Russia, Australia, and China, and is working for the prohibition of migratory bird hunting, promotion of habitat conservation, and joint surveys. Japan also has concluded the Japan-Korea Environment Protection and Cooperation Agreement, whereupon regular meetings and joint surveys were organized for the protection of migratory birds.

The East Asian-Australasian Flyway Partnership (EAAFP):

There are nine major flyways in the world for migratory birds. Japan belongs to the East Asian-Australasian Flyway, which is crucial for more than 50 million migratory waterfowl such as shorebirds, ducks, geese, swans and cranes, including 36 worldwide endangered species. In addition, migratory birds account for 60% of the recorded bird species in Honshu, Shikoku, and Kyushu, and as much as 80% in Hokkaido and Ryukyu islands. This indicates the importance of the Japanese Archipelago for migratory birds.

The East Asian-Australasian Flyway Partnership (EAAFP) is a framework for international collaboration and cooperation to conserve migratory water birds and their habitats in the East Asia and Australasian region. The Partnership was launched in 2006 under the initiative of the governments of Japan and Australia. The EAAFP sets up the "Flyway Site Network", a network of internationally important sites for migratory water birds that promotes awareness-raising activities, conservation, and scientific study of migratory water birds at each network site. Some of Japan's Ramsar Sites, such as Arao-higata, a stopover site for shorebirds, and Izu-numa and Uchinuma, a wintering site for Anatidae, are part of this network. As of October 2022, Japan has 34 network sites, including 24 Ramsar Sites.

Sister Site Arrangements across the East Asian-Australasian Flyway:

In order to conduct collaborative research on shared species and exchange information and experience between Japan and other sites in the Flyway Network, Sister Site Arrangements have been established. The existing arrangements link Kushiro-shitsugen, Kiritappu-shitsugen, Akkeshi-ko and Bekambeushi-shitsugen to Hunter Estuary Wetlands in New South Wales, Australia, Yatsu-higata to Boondall Wetland in Queensland, Australia, Fujimae-higata to wetlands in Geelong, Victoria, Australia, Kej-numa to Junam Reservoir in Changwon, Korea, and Izumi Wintering Habitat of Cranes to Suncheon Bay in Suncheon, Korea.

The Ramsar Wetland Conservation Award

The Ramsar Wetland Conservation Award was established in 1996 at the 6th Meeting of the Contracting Parties to the Ramsar Convention to honor individuals and groups for their significant and long-standing contribution to the wetland conservation and sustainable use.

Up until the 14th Meeting of the Contracting Parties in 2022, three Japanese have been awarded.

Ms. Reiko Nakamura established Ramsar Center Japan in 1990, a non-governmental organization promoting research and aware-

ness raising on the relationships between wetlands and people. Since its establishment, she worked as the secretary general of the organization implementing the Ramsar Convention and promoting wise use of wetland in Japan and in Asia. She devoted herself to raising awareness of the Convention, running environmental education programs, and promoting wetland conservation through network building between wetland researchers and NGOs in Asia. She also organized the Asian Wetland Symposium in Japan, Malaysia, and India and international exchange programs on wetlands for children, and provided medium to long term support for participatory wetland conservation initiatives in various places in Asia. Given her contribution and efforts, she received the Award for Education category in 2005.

Professor Tatsuichi Tsujii has promoted public awareness of the value and importance of wetland conservation through his research on wetland plant ecosystems in Hokkaido, a northern part of Japan known for a diverse range of wetlands. He supported various efforts of conservation and wise use of wetland in multiple places in Japan and dedicated himself to the nation-wide selection of potential Ramsar Sites as the chairman of the Investigative Commission for Potential Ramsar Site of the Ministry of the Environment, Japan, with remarkable contributions to their designation. He also took active participation in international initiatives. To conserve important wetlands as habitats for waterfowl, he was engaged in technical assistance, waterfowl count, and compilation of wetland inventory in the Asia region. His long-standing contribution, including nature restoration in Kushiro-shitsugen, Sarobetsu-genya in Japan, and Lake Chilika in India, led to him being awarded for Science category in 2012.

Mr. Masayuki Kurechi raised awareness and value of rice paddies by drafting Resolution X.31 "Enhancing Biodiversity in Rice Paddies as Wetland Systems" (cf. Appendix 1), which was to be adopted, through his domestic and international coordination, at the 10th Conference of the Parties of the Ramsar Convention (COP10) in 2008. He also contributed remarkably to mainstreaming biodiversity enhancement in agriculture by conducting and disseminating the "winter flooded rice paddy" practice, which creates wintering habitats for geese by enhancing the biodiversity of rice paddies in the area including Kabukuri-numa and the surrounding rice paddies. Meanwhile, he has been researching on the migration routes for geese since the 1970s in order to reintroduce the endangered Aleutian Cackling Goose population. With the cooperation from relevant parties in Japan, Russia, and the United States, he has continued to undertake the project to restore the migration and habitat of geese. Owing to his efforts, he received the Award for Wetland Wise Use in 2022.

Wetland City Accreditation Scheme of the Ramsar Convention

The Wetland City Accreditation Scheme is based on Resolution XII.10 adopted at the 12th Meeting of the Conference of the Parties to the Ramsar Convention on Wetlands (COP12) in 2015. It is a scheme to accredit local municipalities that fulfil the international criteria regarding the participation of local stakeholders, dissemination, and environmental education for the conservation, restoration, and management of wetlands. Only the municipalities that are approved by the Independent Advisory Committee (IAC), a third-party review organization, can receive the accreditation certificate, which is valid for six years.

At the 13th Meeting of the Conference of the Parties (COP13) in 2018, 18 cities from seven countries were accredited.

At the 14th Meeting of the Conference of the Parties (COP14) in 2022, an additional of 25 cities from 13 countries were granted accreditation. Niigata City in Niigata Prefecture and Izumi City in Kagoshima Prefecture were accredited for the first time from Japan.

Accredited municipalities are expected to improve their awareness, establish local branding, and promote further wetland conservation and wise use.

Niigata City:

Niigata City has the "Sakata" Ramsar Site. Development in Sakata is restricted to maintain the wetland environment as a class III special zone of the Sado-Yahiko-Yoneyama Quasi-National Park. Furthermore, it is designated as a National Wildlife Protection Area. Niigata city formulated, after discussing with experts and local stakeholders, a "Natural Environment Conservation Plan in and around Sakata" in 2000 as a guideline for environmental conservation. Since April 2019, the area has been managed under the 4th plan.

In addition to Sakata, Niigata City has various lakes, including potential Ramsar Site candidates Fukushimagata and Toyanogata, and rivers that vary in size, such as Shinano River and Agano River. The rice paddies, which occupy the largest area in Japan, are the feeding and resting site for migratory birds such as Tundra Swan, whose wintering population is the largest among others in Japan.

Izumi City:

Izumi City has the "Izumi Wintering Habitat of Cranes" Ramsar Site. As a result of local people's conservation efforts for more than a half century, this area has become the largest wintering habitat for cranes in Japan, visited yearly by over 10,000 cranes, including Hooded Crane and White-naped Crane.

The cranes and their migration grounds in Kagoshima Prefecture were designated as a National Special Natural Monument in 1952, for their protection. In 1997, 53ha in the National Wildlife Protection Area were designated as a Special Protection Zone as the main crane wintering habitat, which was expanded to 453ha in 2021. The "Izumi Wintering Habitat of Cranes" consists of this farmland (453ha) and the adjacent estuary (25ha) protected by The River Act. In addition, many farmlands in and around the crane wintering habitat in the city are designated as class I Agricultural Land, their conversion to residential or other areas being strictly restricted under the Cropland Act. Furthermore, the importance of conserving cranes and the natural environment is clearly stated in the "Izumi City Comprehensive Plan 2018–2027". Izumi City also formulated a "Plan for Conservation and Wise Use of the Ramsar Site in Izumi City" in 2022, and it is implementing specific initiatives based on four perspectives, namely, "conservation/restoration," "wise use," "exchange/learning," and "regulation on the use of the wintering habitat".