Fifth National Report of Japan
to the Convention on Biological Diversity

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Contents

Executive Summary

Chapter 1 Situation of, trends in, and threats to biodiversity

Question 1: Why is biodiversity important for your country?

Japan has many endemic species and a rich biota (estimated at about 90,000 known species) within a small area of national land. About 15% of the world's marine species also inhabit the seas around Japan. This is due to the geohistorical characteristics of Japan resulting from its location on the edge of continental Asia and consisting of an archipelago of many islands extending from north to south, with a vast area of ocean surrounding it and with repeated connections to and separation from the Asian continent throughout this geological history, which now provides a migratory route with many relay points for birds and other animals. In Japan, with such rich ecosystems, people have considered themselves as part of nature and created diverse cultures by respecting and living with nature.

The conservation and sustainable use of biodiversity is critical as it provides the foundation for the existence of all life, has useful value for humans, has become the basis for a rich culture and ensures the safety of life into the future. On the other hand, our lives, through consumption activities, are linked to biodiversity not only within, but also outside the country, thus causing impacts on global biodiversity.

The evaluation of biodiversity and ecosystem services is in progress as it is effective to assess their economic value in order to convey their importance in a comprehensible manner.

Question 2: What major changes have taken place in the status of and trends in biodiversity in your country?

According to an analysis of the changes in biodiversity over the past 50 years, the loss of ecosystems due to human activities has affected biodiversity as a whole. The degree of biodiversity loss has been especially great in inland water ecosystems, marine and coastal ecosystems, and island ecosystems. This trend towards biodiversity loss is still continuing. When focusing on species, the number of species recorded in the Red List as endangered wild fauna and flora has showed an increase of about 400 species compared with the estimation in 2006-2007, and 3,597 species are listed from a total of 10 taxonomic groups.

Marine and coastal ecosystems in the Pacific Coast of Tohoku region, such as sand dunes, tidal flats, and seagrass beds have been extensively degraded, and the living organisms in these habitats were significantly impacted due to the Great East Japan Earthquake in 2011. The change and recovery process is being carefully monitored.

Question 3: What are the main threats to biodiversity?

Threats to biodiversity were assessed in 4 categories; 1) crisis caused by human activities including development, 2) crisis caused by reduced human activities, 3) crisis caused by artificially introduced factors, and 4) crisis caused by changes in the global environment. Regarding 1), it is estimated that the impacts are reducing in forest ecosystems, but are still strongly impacting inland waters, marine areas, and coastal ecosystems. Regarding 2), the impact is high for agricultural ecosystems. Regarding 3), living organisms inhabiting inland waters and small islands are at a crisis point due to the impact of the introduction of alien species. Regarding 4), there is concern regarding vulnerable ecosystems such as those in alpine zones and coral reefs.

Question 4: What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

The distribution and population of the sika deer (*Cervus nippon*) and wild boar (*Sus scrofa*) have expanded and increased across the country due to several social factors such as a reduction in human activities including an increase in the area of abandoned farmland and a reduction in hunting pressure

(including as a result of depopulation and the aging of the population in rural areas) as well as several natural factors such as a declining trend in the amount of snowfall. Both of these animals cause considerable damage to agriculture and forestry and also have a serious impact on natural ecosystems, such as damage by feeding on alpine plants and debarking trees. Moreover, invasive alien species are having a severe impact on agriculture, forestry and fisheries. Damage to farm produce by raccoons (*Procyon lotor*) and damage to fisheries by the largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*) are representative examples. Coral bleaching, the disappearance of seagrass beds and changes in the regional distribution of living organisms as a result of climate change are of concern as impacts due to the changing global environment. Furthermore, there is concern that these changes are affecting human lives and the socio-economy such as by damage to fisheries, changes in the areas suitable for food production and an increase in the risk of infectious diseases.

Optional question: What are possible future changes for biodiversity and their impacts?

Due to changes in the areas that are suitable as habitats for living organisms as a result of climate change, a decline in the area suitable for beech forests, which are currently distributed in colder areas, and a decline in alpine plant communities are predicted. Expansion of the damage from diseases affecting forests in cold areas is also predicted. In relation to this, it has been found that there is a possibility of the disappearance of coral reefs from areas surrounding Japan due to the southward advance of ocean acidification to areas available for coral distribution.

According to predictions, there is a high possibility of the expansion of the distribution of sika deer (*Cervus nippon*) in various regions including Tohoku, Hokuriku, Chugoku Shikoku and Kyushu Regions.

Ecosystems in Satoyama areas have been significantly transformed due to reduced human activities. With the progressive decline in the human population and the aging of the society in the future, by 2050, 20% of residential areas are expected to become non-residential areas and in 40% of these areas the population is expected to decrease by half, which will exacerbate the impact on biodiversity in Satoyama areas.

Chapter 2 Implementation of the National Biodiversity Strategy of Japan and the mainstreaming of biodiversity

Question 5: What are the biodiversity targets set by your country?

In the National Biodiversity Strategy of Japan 2012-2020, revised in September 2012, 13 national targets corresponding to the Aichi Biodiversity Targets as well as about 700 measures and 50 numerical goals have been set.

Question 6: How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

In the National Biodiversity Strategy of Japan 2012-2020, the “Roadmap toward achievement of the Aichi Biodiversity Targets” was added to the existing two-part, “Strategy” and “Action plan.” The concept of a “Socio-ecological sphere” in which independent and distributed local communities are connected by ecosystem services, was also indicated in light of the social circumstances such as the Great East Japan Earthquake and the decline in the population of Japan. Furthermore, taking into account the progress regarding the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) and such, “Strengthening the scientific foundation and utilizing it in policies” was added as a fifth strategy to the four existing basic strategies; 1) Mainstreaming biodiversity in society, 2) Reviewing and restructuring the relationship between humans and nature in the community, 3) Securing connections between forests, rural communities, rivers, and the sea, and 4) Taking action with a global vision.

Question 7: What actions has your country taken to implement the Convention since the fourth report and what have been the outcomes of these actions?

The convention has been implemented in various fields since 2009.

Regarding legal systems, an Act to promote biodiversity conservation activities that are conducted in collaboration among multiple actors such as municipalities, NPOs, local residents, and companies was formulated in 2010. Laws for the purpose of protecting domestic and foreign endangered species of wild fauna and flora and taking measures against alien species were revised to strengthen the regulations.

With a view to enhancing conservation areas, the definition of the new "marine protected areas" was established in 2011 and assessment in line with this definition has been conducted. Regarding national parks, the Natural Parks Act was revised in 2009 and improvement of the protection system for marine areas and the strengthening of ecosystem control have been implemented. By focusing on marine areas, the Kerama-shoto National Park will be newly designated in 2014.

Regarding wildlife management, the designation of national endangered species of wild fauna and flora based on the Law for the Conservation of Endangered Species of Wild Fauna and Flora, the conservation of endangered species of wild animals and plants through the promotion of Programmes for the Rehabilitation of Natural Habitats and the Maintenance of Viable Populations, the strengthening of actions for the protection and management of wildlife, and handling restrictions and control projects regarding Invasive Alien Species have been conducted.

In addition, based on the Great East Japan Earthquake, the promotion of "Green Reconstruction Projects" through the establishment of the Sanriku Fukko (Reconstruction) National Park, and the restoration of coastal disaster prevention forests and more will be carried out.

Biodiversity-related conventions have been steadily implemented, bearing fruit such as the inscription of the Ogasawara Islands on the World Heritage List in 2011 and the designation of 9 Ramsar Sites in 2012.

Regarding international conventions, capacity development of developing countries has been conducted toward the achievement of the Aichi Biodiversity Targets through the "Japan Biodiversity Fund" established in the Secretariat of the Convention on Biological Diversity. Since COP10 in 2010, the *Satoyama* Initiative has also been conducted for the purpose of the sustainable conservation of human-influenced natural environments, and international cooperation mainly with the Asia-Pacific region has been implemented with the Asia Parks Congress held in November 2013 in Japan, etc.

Question 8: How effectively has biodiversity been mainstreamed into relevant sectoral and cross-sectoral strategies, plans, and programmes?

For the mainstreaming of biodiversity, the "Japan Committee for United Nations Decade on Biodiversity (UNDB-J)" consisting of the relevant actors was established in 2011, and actions toward the mainstreaming of biodiversity such as through approval for cooperation projects addressed by these actors have been implemented.

The formulation of a local biodiversity strategy has also been promoted in local governments. Local strategies have already been formulated in 26 prefectures and are under formulation or consideration in 20 more prefectures.

In the economic community, the Partnership for Business and Biodiversity was established in 2010. Based on this, the concept of biodiversity conservation has been included in about 85% of the management principles/policies of the business members. The establishment of certification systems for forest and marine products has also been advanced.

Biodiversity has been promoted in the national government as well by being included in the basic plans and strategies of the relevant sectors.

In the primary industry field, revitalization of the sustainable agriculture, forestry and fisheries and rural areas focusing on biodiversity, and measures toward the Aichi Biodiversity Targets have been promoted based on the revision of the "Ministry of Agriculture, Forestry and Fisheries Biodiversity

Strategy" in 2012. The improvement of the production base and forest management with consideration for biodiversity has also been promoted.

In the national land development field, the formation of biodiversity networks among cities and for rivers, and the restoration of nature in marine coastal areas have been advanced.

In the research field, promotion of the study and evaluation of marine biodiversity, the gathering and management of information on genetically modified organisms/food and the compilation and sharing of information on genetic resources are being undertaken.

Question 9: How fully has your national biodiversity strategy and action plan been implemented?

As a result of the review undertaken in September 2013 on the progress of implementation after the revision of the National Biodiversity Strategy of Japan, it indicates progress in almost all the fields. Seven numerical goals out of fifty have already been achieved and three have progressed by 50% or more.

Chapter 3 Achievement status of the Aichi Biodiversity Targets and the contribution to the **Millennium Development Goals**

Question 10: What progress has been made by your country towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?

Regarding 5 strategic goals, 13 national targets, and 48 key action goals for the achievement of the targets that were set in the National Biodiversity Strategy of Japan 2011-2020 corresponding to the Aichi Biodiversity Targets, it indicates progress in almost all the fields. In addition, regarding related indicator groups that were set for evaluating the achievement status, progress has mostly been made in all groups, except for groups without updated data.

Regarding the strategic goal A, efforts to mainstream biodiversity have been promoted by the "Japan Committee for United Nations Decade on Biodiversity" established with the participation of diverse actors. Various efforts have also been made toward the achievement of mainstreaming of biodiversity in the society, such as through the development of local biodiversity strategies and the progress of efforts involving the private sector.

Regarding the strategic goal B, efforts for the minimization of human pressures that degrade ecosystems have been made, such as by the formation of ecological networks, nature restoration projects, consideration for the enhancement of measures for the protection and management of wildlife, efforts toward the implementation of sustainable agriculture, forestry and fisheries while securing biodiversity conservation, the improvement of aquatic environments, and measures against invasive alien species, etc.

Regarding the strategic goal C, comprehensive efforts to improve the situation of biodiversity have been made, such as an increase in designated protected areas (natural parks and Wildlife Protection Areas, etc.), measures against species extinction and a reduction in the number of threatened species (a review of the Red List and consideration of the selection policy for national endangered species of wild fauna and flora, etc.) and the conservation of genetic resources of agricultural organisms by the National Institute of Agrobiological Sciences Genebank Project, etc.

Regarding the strategic goal D, strengthening of the benefits obtained from biodiversity and ecosystem services including contributions to the mitigation of and adaptation to climate change has been promoted through efforts like the *Satoyama* Initiative. Efforts for the early acceptance of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization have also been made.

For achieving the strategic goal E, measures based on the national strategy have been promoted steadily through progress reviews on such measures. System improvements such as the collection, provision, and sharing of biodiversity-related information have also been conducted, and the scientific foundation has been strengthened by providing support to the Intergovernmental Platform

on Biodiversity and Ecosystem Services (IPBES) for science policy and improving domestic systems. Moreover, capacity development in developing countries in the biodiversity field through the Japan Biodiversity Fund, etc., has been promoted.

Question 11: What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in your country?

As for the average amount of bilateral development assistance for biodiversity by the OECD countries between 2010 and 2011, Japan is ranked top since nature conservation was set as a priority field in the medium-term policy for official development assistance. It was announced in COP10 that a total amount of 2 billion US dollars will be provided over 3 years from 2010 to support biodiversity conservation, as Japan's "Life in Harmony Initiative" to assist developing countries with the conservation of biodiversity. Capacity development support regarding the Aichi Biodiversity Targets has also been provided to developing countries with the establishment of the Japan Biodiversity Fund. These efforts contribute to the conservation and sustainable use of biodiversity in developing countries.

Question 12: What lessons have been learned from the implementation of the Convention in your country?

Through the implementation of past conventions, the following 5 items are provided as challenges toward the conservation and sustainable use of biodiversity in Japan; 1) Low interest in biodiversity, 2) Securing of the workforce and cooperation, 3) Recognition of a "socio-ecological sphere" connected by ecosystem services, 4) Conservation and management of the national land based on a decline in the Japanese population, etc., and 5) Enhancement of scientific knowledge.

Table: List of the achievement status of the Aichi Biodiversity Targets

Aichi Biodiversity Targets		Outline of the Aichi Biodiversity Targets	Setting of national targets	Number of key action goals	Number of related indicators	Number of related indicators with an increase/ improve trend *1	Number of related indicators maintaining their status *2	Achievement status of the Aichi Biodiversity Targets *3
Strategic goal A Actions for underlying causes	Aichi Biodiversity Target 1	People are aware of the value of biodiversity and the steps being taken to conserve it.	●	5	14	9/10	0/10	
	Aichi Biodiversity Target 2	Biodiversity values will be integrated into national/local plans and incorporated into the national accounting and reporting system as appropriate.						
	Aichi Biodiversity Target 3	Incentive measures including subsidies harmful to biodiversity will be eliminated or reformed, and positive incentive measures will be developed and applied.						
	Aichi Biodiversity Target 4	All relevant stakeholders will implement plans for sustainable production and consumption.						
Strategic goal B Actions for direct causes	Aichi Biodiversity Target 5	Loss of natural habitats including forests will be decreased by at least half or close to zero if possible, and degradation/fragmentation will be reduced significantly.	●	4	4	4/4	0/4	
	Aichi Biodiversity Target 6	Fishery resources will be harvested sustainably.	●	4	14	7/10	2/10	
	Aichi Biodiversity Target 7	Agriculture, aquaculture, and forestry will be sustainably managed.						
	Aichi Biodiversity Target 8	Pollution will be reduced from harmful levels.	●	3	10	5/8	2/8	
	Aichi Biodiversity Target 9	Invasive alien species will be controlled and eradicated.	●	3	4	3/3	0/3	
	Aichi Biodiversity Target 10	Adverse impacts on ecosystems vulnerable to climate change or marine acidification (corals, etc.) will be minimized.	●	1	4	0/1	1/1	
Strategic goal C Maintenance and improvement of the conditions	Aichi Biodiversity Target 11	17% of terrestrial areas and 10% of marine areas will be conserved through the system of protected areas and other effective area-based conservation measures, etc.	●	4	10	9/9	0/9	 (Terrestrial areas)  (Marine area)
	Aichi Biodiversity Target 12	Extinction and reduction in the population of threatened species will be prevented.	●	5	7	3/5	1/5	
	Aichi Biodiversity Target 13	The genetic diversity of crops and farm animals will be maintained and its loss will be minimized.						
Strategic goal D Strengthening of the benefits of nature	Aichi Biodiversity Target 14	Ecosystem services will be provided, restored, and conserved.	●	6	4	1/3	2/3	
	Aichi Biodiversity Target 15	Climate change mitigation and adaptation will be enhanced through the contribution of conservation and restoration, including the restoration of at least 15 per cent of degraded ecosystems.	●	3	6	5/6	1/6	
	Aichi Biodiversity Target 16	The Nagoya Protocol on ABS will come into force and be implemented.	●	2	-	-	-	
Strategic goal E Strengthening of implementation	Aichi Biodiversity Target 17	The contracting parties will develop and implement an effective and participatory national biodiversity strategy.	●	2	2	1/1	0/1	
	Aichi Biodiversity Target 18	Traditional knowledge will be respected and mainstreamed.	●	1	-	-	-	
	Aichi Biodiversity Target 19	Knowledge and science and technology for biodiversity will be improved.		4	2	2/2	0/2	
	Aichi Biodiversity Target 20	Financial resources for the effective implementation of the strategic plan will increase significantly.		1	-	-	-	

*1: Denominators are related indicators that are evaluable and have multi-year data. Numerators are the numbers of related indicators with an increase/improvement trend.
*2: Denominators are related indicators that are evaluable and have multi-year data. Numerators are the number of related indicators maintaining their status or that already have a high standard without any decrease (excluding indicators counted in *1). There are indicators that have already achieved the targeted value or standards and contribute to the achievement of the Aichi Targets.
*3: Items with the respective Aichi Biodiversity Targets already achieved are marked with ★. Items with the respective measures related to Aichi Targets that are in progress are observed in the review of the latest NBSAPs and are marked with an up-arrow. Thus, the achievement status is not evaluated by only *1 and *2. Relevant measures are continuously being implemented.

Chapter 1 Biodiversity: the current situation, trends and threats

Question 1 Why is biodiversity important for your country?

1.1 Importance of biodiversity

(1)Characteristics of biodiversity in Japan from the global perspective

The number of known species in Japan is about 90,000. The estimated number exceeds 300,000 when unknown species are included. Therefore, Japan has rich biotas on its 380,000 km2 land area. Japanese biodiversity is characterized by a high percentage of endemic species: about 40% of land mammals and vascular plants, about 60% of reptiles and about 80% of amphibians are endemic to Japan. Japan has rich natural environments which provide habitats for wild monkeys (Japan is the only developed country which has a wild monkey population) and many other medium and large wild animals including bears and the sika deer (*Cervus nippon*). Therefore, Japan is recognized as a priority area for biodiversity conservation in the world.

The characteristics of biotas in Japan have been formed by the following factors: most of its land is part of an island arc situated in the edge of the continent and on multiple plate borders; its land extends over about 3,000 km from north to south in the middle-latitude area from 20 degrees north to 45 degrees north; it has land with large altitude differences ranging from seacoasts to mountains as well as swift rivers with steep longitudinal slopes; it has several thousand large and small islands; the diverse and complex geological conditions; monsoons create four distinct seasons and a wet climate with a rainy season and typhoons; and it underwent the geohistorical processes of joining and separating from the continent; and it belongs to multiple geographical regions in terms of its flora and its fauna. In addition, diverse habitats were developed through various disturbances including volcanic eruptions, earthquakes and tsunamis, the flooding of rivers and typhoons.

A 1:50,000 current vegetation map of Japan, covering the entire area of Japan has been developed based on the results of the National Survey on the Natural Environment. With respect to the percentage of each vegetation type to the total land area, forests (natural forests, secondary forests close to natural forests, other secondary forests and afforested land) account for 67%, which is similar to Scandinavian countries such as Sweden (70%). The forest coverage in Japan is also very high compared to other developed countries including the United Kingdom (12%) and the United States (33%). Forests account for about two thirds of the total area of Japan, of which natural forests account for 17.9% of the total area of Japan. Natural vegetation (natural forests plus natural grasslands) accounts for 19.0% of the total area of Japan. Natural vegetation areas are distributed mainly in areas which tend to be isolated from human activities such as steep mountains, peninsulas and islands. On flatland and gently contoured mountains, the percentages of secondary substitutional vegetation such as secondary forests and secondary grassland as well as afforested land and farmland are also high. These various types of vegetation developed through different levels of interaction between nature and human activities are distributed at various latitudes, altitudes, etc., and they provide the foundation for the very rich and diverse ecosystems found in Japan.

Japan has much steep terrain and rainwater falling on catchment areas rapidly flows down through the rivers. The flow of rivers fluctuates greatly in the rainy season and during typhoons. Within the rivers, diverse and characteristic environments develop including deep pools and rapids as well as floodplains in downstream areas. Floras and faunas developed through adapting to these characteristic ecosystems can be found in rivers across Japan.

Japan has large amounts of precipitation with a relatively mild climate and succession tends to progress at a high rate in this environment. In order to allow many plants and insects which prefer light environments to live and thrive in Japan, it is important that light environments are maintained on wetlands, grassland (including secondary grassland), floodplains, secondary forests, etc. through human intervention or in other ways. It can be said that these secondary natural environments resulted from the Japanese climate, its

geohistory and the lifestyles of its people to live in harmony with nature, but these environments are currently undergoing large-scale losses.
Japan has the world's sixth largest exclusive economic zone (EEZ). Diverse environments have been formed in the EEZ of Japan, due to many cold and warm currents including the Kuroshio Current, the Oyashio Current and the Tsushima Current flow along the Japanese archipelago that extends from north to south. In coastal areas, we can see diverse ecosystems with long indented coastlines of about 35,000 km, a length equivalent to seven-eighths of the earth's circumference, and tidal flats, sea grass beds, coral reefs, etc. that are rich in biotas. The ecotones in the areas between the terrestrial areas and coastal waters along the coastlines have rich biodiversity. For example, intertidal zones at different altitudes are inundated with seawater at different times. This creates varied environments with different aridity, temperature and salinity, where diverse organisms that adapted to each environment inhabit. In parts of Hokkaido including the Shiretoko Peninsula which is a world natural heritage site, seasonal sea ice reaches the coast of the Sea of Okhotsk and nutrients contained in the ice nurtures diverse marine ecosystems. In tropical and subtropical zones, distinct ecosystems have formed in brackish waters at the estuaries where seawater mixes with fresh water, for example many organisms resistant to fluctuating salinity inhabit and mangrove forests grow. In the deep sea, ecosystems which are entirely different from the ones in coastal areas and the sea surface have formed including the chemosynthetic ecosystem at hydrothermal vents and cold water coral communities.

Due to the diverse environments, Japan features many sea fish species living in its neighboring seas when compared to the Mediterranean Sea and the west coast of North America located on the same latitude. The Japanese waters have rich diversity of species, including 50 species of marine mammals out of 127 worldwide (40 species of whales and dolphins; eight species of seals and sea lions; sea otters (*Enhydra lutris*); and dugongs (*Dugong dugon*)), about 3,700 species of sea fish species which is about 25% of an estimated 15,000 worldwide sea fish species, and 122 species of seabirds out of about 300 worldwide. Japanese waters have very high levels of biodiversity, with over 30,000 species living in the areas ranging from bacteria to mammals, which is about 15% of the total number of marine species worldwide.

Biotas in Japan have particularly wide connections with other Asian regions. Through repeated connection with and separation from the continent in the repeated glacial ages and interglacial ages, species which migrated from the continent in glacial times and then became isolated in alpine zones and on islands have survived to create distinctive biotas.

For example, diverse animals and plants live in warm and humid subtropical forests which extend over the Amami and Ryukyu Islands. These animals and plants include endemic species that are only found on the Amami and Ryukyu Islands as well as internationally rare species listed on the IUCN Red List, such as the Iriomote Cat(*Prionailurus bengalensis iriomotensis*), the Amami rabbit (*Pentalagus furnessi*) and the Okinawa rail (*Gallirallus okinawae*). Therefore, the Amami and Ryukyu Islands are important areas for biodiversity conservation. They are continental islands which repeatedly connected with and separated from the continent, over a long period of time. The areas' distinct flora and fauna clearly show the geohistory of the areas where the invasion and isolation of organisms led to speciation via various evolutionary lines. There are many organisms which diverged into endemic species or endemic subspecies on each isolated island. For example, tip-nose frog (*Odorrana sp*.) has diverged into five species within the area from the Amami Islands to Taiwan. Another typical example is Kuroiwa's ground gecko (Goniurosaurus kuroiwae kuroiwae), which has diverged into five subspecies, although the species is only found in a limited area (islands between Tokunoshima Island and the Okinawa Islands). These examples show complex evolutionary trees resulting in diverse species and subspecies. Therefore, it can be concluded that the Amami and Ryukyu Islands have globally important and unique nature.

Migratory birds, sea turtles and some marine mammals come to Japan from the Pacific Rim countries including Asian countries. Many white-fronted geese (*Anser albifrons*) and whooper swans (*Cygnus cygnus*), which are typical winter birds found in Japan, breed in Siberia and the Russian Far East in the summer and pass the cold winter in Japan or other countries. Swallows (*Hirundo rustica*) that come to Japan in the summer pass the winter mainly in the Philippines, Indonesia, Malaysia, and southern Vietnam, and therefore Taiwan is an important stopping point for them. Shore birds use tidal flats in Japan as a stopping point in the spring and autumn. The black-faced spoonbill (*Platalea minor)* breeds on remote islands in the Yellow Sea coastal area

and winters in Japan, Taiwan, etc. The habitats of sea birds such as the short-tailed albatross (*Phoebastria albatrus*) and petrels(Procellariformes) which breed in Japan extend not only to Japanese waters but also to international waters. In order to conserve these wildlife species through integrated efforts in the entire region of Asia, it is important to consider these connections because migratory birds that come to Japan cannot survive unless both the habitats in Japan and the breeding and wintering places in Asian countries are conserved. For example, the Schrenck's bittern (*Ixobrychus eurhythmus*) which is a famous bird species coming to Japan in the summer and the fairy pitta (*Pitta brachyura nympha*) with vivid-colored wings are endangered species. In addition to changes in habitats in Japan, destruction of wintering environments in Southeast Asia has also been pointed out as a cause of the threatened survival of these species.

As for organisms other than migratory birds, loggerhead turtles (*Caretta carett*) hatched in Japan migrate to the coast of North America where they mature, before returning to Japan to lay their eggs. It is becoming clear that Japanese eels (*Anguilla japonica*), which are familiar ingredients in Japanese food culture, are born in the sea off the Mariana Islands in the North Pacific. It is also known that many migratory fish species and marine mammals travel over vast areas of sea crossing national borders, for example salmon born in Japanese waters then travel all over the Bering Sea and humpback whales (*Megaptera novaeangliae*) that breed in Japanese waters use the Northern Pacific coast as a feeding ground.

(2) Biodiversity that supports life and livelihoods

Benefits that can be obtained from ecosystems where diverse organisms interact are referred to as “ecosystem services” and in the Millennium Ecosystem Assessment (2005),
they are divided into four categories: “provisioning services” which provide food, water, timber, fiber, resources for the development of medicines, etc.; “regulating services” including water purification, climate regulation, prevention of natural disasters and the mitigation of damage, control of pests through natural enemies, etc.; “cultural services” which provide spiritual and religious values, aesthetic values such as natural landscape, recreational spaces, etc.; and “supporting services” which include nutrients cycle, soil formation, supplying oxygen through photosynthesis, etc.
Based on the idea of ecosystem services explained above, the National Biodiversity Strategy of Japan 2012-2020 summarized the importance of the conservation of biological diversity and the sustainable use of its components into four bullet points, as shown below.

①“Biodiversity provides the foundation for the existence of all life.”
Living organisms on the earth are closely related and connected to each other within one circle called the global ecosystem. Various functions of the diverse ecosystem provide the foundations essential for the existence of all life at the present time and in the future.

②“Biodiversity has useful value for humans.”
We, humans, have relied on diverse organisms in our daily lives. In addition, there are possibilities for indirect or potential utilization of organisms. Therefore, biodiversity has useful value for humans which contributes to a good life at the present time and in the future.

③“Biodiversity becomes a fountain of rich culture.”
Similarly to Japan, there are communities around the world which consider humans as part of nature, where people have created diverse cultures by respecting nature and living with nature. Biodiversity provides a foundation for spiritual worlds. It supports and becomes a fountain of diverse cultures which are the assets full of local characteristics indigenous to each area.

④“Biodiversity ensures the safety of life into the future.”
The development and conservation of diverse and healthy forests, the abstention from improperly converting the landscape and the promotion of sustainable agriculture contribute to preventing soil erosion and disruption as well as securing safe drinking water and food. Maintaining a sound balance of nature and its use by humans from a biodiversity standpoint will lead to efficiently ensuring the safety of life, when looking from a long-term perspective over generations.

(3) Japan causing impacts on global biodiversity

Our life is supported by biodiversity. The ecological footprint is an indicator to measure the impact of the lives of people around the world on biodiversity, which converts various impacts on the global environment generated by human consumption activities into the land area needed to meet the consumption. According to the Living Planet Report 2012 published by the WWF, the ecological footprint per Japanese person in 2008 is about 1.5 times the global average and 2.3 planets would be needed if the entire world's population is to live in the same way as Japanese people. One of the characteristics seen in Japan is that its ecological footprint is high considering its level of land productivity for renewable resources and its capacity to absorb CO2. Analysis results from another study show that 30% of the world's threatened species are significantly affected by the production and development by developing countries for the exportation to developed countries. It reports that Japanese consumption activities have the second largest impact after the United States on many threatened species through international trade. These studies show that Japanese people rely on imports from overseas for much of our domestic consumption of resources, which is affecting biodiversity overseas.

For example, Japan is one of the main importers of wood. In 2010, it imported 52,020,000 m3of timber (wood except for shiitake mushroom logs and fuelwood) from North America, Australia, Southeast Asia, Europe and other parts of the world, which accounts for 74% of domestic demand for timber. Japan therefore is involved in logging and the development of forests around the world through the importation of wood, thus possibly causing impacts on biodiversity overseas. In addition, deforestation abroad could affect biodiversity in Japan, for example where forests in Southeast Asia provide important wintering sites for migratory birds which spend the summer in Japan.

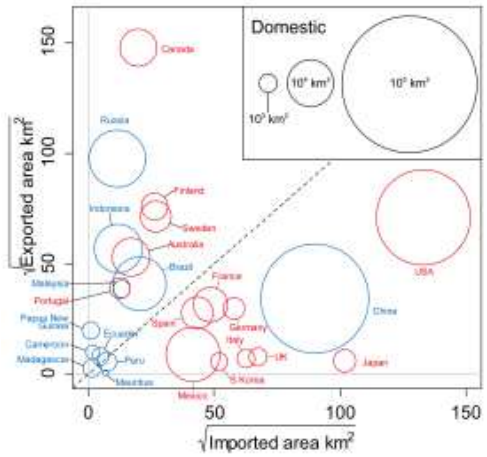
The Ministry of the Environment has been conducting the "Comprehensive Research for the Observation, Forecast and Evaluation of Asian Biodiversity" since 2011 with Japanese researchers using the Environment Research and Technology Development Fund (see Annex I for details). In the study, the biodiversity footprint (the impact score on endangered species) in wood-producing countries during the period between 2000 and 2005 was obtained based on the estimated wood trade results in major wood products other than furniture and fuel wood (logs, timber, wood panels, wood pulp, and paper and paperboard except for recycled paper) between producing countries and end-consumer countries (*Kastner et al. 2011*), together with the distribution data both of world's forest loss and terrestrial endangered vertebrates (mammals, birds, reptiles and amphibians) (Figure 1-1-1). The result suggested the possibility that Japan and China are causing substantial impact on tropical biodiversity. As illegal logging has particularly serious effects on forests around the world, the Government of Japan has established the Guideline for Verification on Legality and Sustainability of Wood and Wood Products , targets the wood and wood products with proved legality and sustainability for government procurement based on the Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Green Purchasing Act) and diffuses these efforts to local governments, private businesses and the citizens. There are also voluntary efforts among private businesses to take biodiversity into consideration such by establishing and participating in the Consortium for Sustainable Paper Use, and creating their own timber and paper product procurement guidelines. These efforts are important not only per se but also in order to achieve the Millennium Development Goals.

Japan is one of the largest consumers of marine products, which include not only the products caught in its EEZ where Japan has the sovereign right to resource utilization, but also products caught in international waters and within the EEZs of other countries based on agreements. Our consumption of marine products is supported by global marine biodiversity, because about half of the seafood consumed in Japan is imported and many fish species migrate over extended areas of the oceans that are connected with each other globally. For example, Japan consumes about one fifth of the total global tuna catch. Japan has adopted a system that allows only imports of legally caught Northern and Southern bluefin tunas (*Thunnus thynnus* and *Thunnus maccoyii*) so that there would not be expansion of illegal fishing and overexploitation of marine resources with the intention of export to Japan. Japan is calling on the international community to introduce similar systems for other tuna species.

It is necessary for us to realize that the importation of a great part of our food, wood and other resources means the importation of large quantities of substances such as nitrogen. For example, excess amounts of nitrogen, etc. cause eutrophication of inland waters and the sea. There are also cases where some plants whose

growth is facilitated by the accumulation of nitrogen exterminate other plants, which cause changes in the composition of plant communities. As such, our everyday lives are closely connected to global biodiversity, and it is necessary for Japan to strive to achieve the sustainable use of the natural environment and resources from the international perspective, by incorporating material balances including nitrogen cycle into the efforts.

Figure 1-1-1 Forest area footprint associated with the timber trade (top 25 countries)



The horizontal axis indicates the impact on other countries due to imports, the vertical axis indicates the impact from other countries due to exports, and the size of the circles indicates the impact from domestic consumption.
Red: OECD member countries (advanced countries), Blue: Other countries (developing countries)

(4) The economic valuation of biodiversity

Visualizing biodiversity and ecosystem services through economic valuations is an effective way of mainstreaming biodiversity because it helps to communicate the importance of biodiversity and ecosystem services in a clear manner. The Economics of Ecosystems and Biodiversity (TEEB) is a project for economically evaluating biodiversity. It was proposed by the European Commission (EC) and Germany. A series of reports were compiled before COP 10. TEEB points out that it will be effective if all parties incorporate the importance of biodiversity into their decision making and conduct economic valuations before coming to a decision. In Japan, the government has created a pamphlet which introduces TEEB and also created a website which explains the economic valuation of biodiversity and ecosystem services in order to raise the awareness of people.

The Japanese government also conducts the economic valuation of ecosystem services nationwide, for each type of ecosystem including coral reefs and forests. According to calculations made by the Ministry of the Environment, the annual economic value of the domestic coral reef ecosystem service accounts for 239.9 billion yen in the field of sightseeing/recreation, 10.7 billion yen for providing commercial marine products, and 7.5 to 83.9 billion yen for protection against water and erosion damage.

The Science Council of Japan conducted monetary evaluation (economic valuation) of the multiple functions of forests using the Alternative Method. The results are shown in Table 1-1-1 (the monetary evaluation of the economic value of biodiversity and ecosystems is not implemented). Japan also implements the economic valuation of biodiversity when tackling individual issues. For example, in FY2012, the Japanese government evaluated the “value of biodiversity which can be conserved by designating the Amami Islands as National Parks” and the “value of biodiversity which can be conserved by implementing measures to control feeding damage by sika deer (*Cervus nippon*) on natural vegetation nationwide.” Japan will continue to conduct the economic valuation of biodiversity and consider the utilization of the method in various political measures. Since value of biodiversity and ecosystem services production functions are not yet fully illustrated, further increased scientific data collection and technical improvement of evaluation methods are needed. Japan will compile and transmit the information required when each actor actually implement economic valuation of

biodiversity and ecosystem services including above challenges.

Table 1-1-1 Estimations of the monetary value of the multiple functions of forests

Functions	Amount appraised/year
Carbon dioxide absorption	1 trillion 239.1 billion yen
Alternative to fossil fuels	226.1 billion yen
Prevention of surface erosion	28 trillion 256.5 billion yen
Prevention of surface failure	8 trillion 442.1 billion yen
Flood mitigation	6 trillion 468.6 billion yen
Water resources storage	8 trillion 740.7 billion yen
Water quality purification	14 trillion 636.1 billion yen
Health/Recreation	2 trillion 254.6 billion yen

Report by the Science Council of Japan "Appraisal of the multiple functions of agriculture and forests involved in the global environment/human activities" and the related attached documents

Question 2. What major changes have taken place in the status and trends of biodiversity in your country?

1.2 Major changes to the biodiversity situation and trends

(1) The current situation of ecosystems

The following explains the current situation of ecosystems with a description of changes over the past 50 years including the high economic growth period when there was a great impact on biodiversity in Japan. Ecosystems are divided into six categories in reference to the ecosystem classification employed in the CBD: forest ecosystems, cultivated ecosystems, urban ecosystems, inland water ecosystems, marine and coastal ecosystems and island ecosystems.

①Forest ecosystems

In Japan, forests cover about 250,000 km2 of land which accounts 67% of the national land. They are important habitats for many animal and plant species. For example, about 70% of mammal species rely on forests. 170 bird species which breed in Japan also rely on forests. This is about 70% of all 251 bird species which breed in Japan.

When the continuity of forests nationwide is assessed based on the current vegetation map which was developed from the results of the National Survey on the Natural Environment, the continuity of forests on most of the national land can be observed, especially on the backbone mountains. The forest area increased by about 10,000 km2 over the period between 1943 and 1966. Although the forest area has remained the same since then, the area of forests with a high level of naturalness (natural forests and secondary forests) out of the total forest area greatly decreased in the period between 1943 and the 1980s. This was partly because forests with a high level of naturalness as well as artificial forests were cleared in response to the increasing demand for timber for building and other purposes after the end of World War II, which was accompanied by large-scale monoculture reforestation using the Japanese cedar, the Japanese cypress, etc. The area of forest has hardly increased or decreased in recent years, but the biomass of forests is increasing.

On the other hand, the amount of fuelwood production has rapidly decreased since the 1950s due to changes in energy demand. Although demand for fuelwood in 1955 was about 20 million m3, it was hardly in use by the 1970s. With this backdrop, Satoyama forests used as fuelwood forests were left unmanaged and succession of the forests progressed, which led to decreased populations of organisms living in *Satoyama*

areas that prefer bright environments.

The effects of the sika deer (*Cervus nippon*) on forest vegetation have become serious in recent years as their distributional range expands nationwide. In the results of a questionnaire survey conducted by the Society of Vegetation Science in 2009 and 2010, it was reported that impacts on vegetation were observed in the entire distributional range for the sika deer and that serious impacts were observed over a wide area especially in the Kinki Region. Seriously affected areas included areas which have typical natural environments in Japan such as Shiretoko, Okunikko, Okutama, Mt. Fuji, the Southern Alps, Odaigahara and Yaku Island.

It is expected that all types of forest vegetation will move to higher elevations as global warming progresses. However, alpine vegetation might decrease as it cannot go higher than the summit. It is reported that on Mt. Apoi in Hokkaido, the creeping pine zone has moved upwards as snowfall decreases and alpine meadows are rapidly receding. There is also a possibility that alpine vegetation will receive devastating impacts by the invasion of alpine zones by the sika deer (*Cervus nippon*), which is thought to be facilitated by decreasing snowfall.

②Cultivated ecosystems

Through the long and continuous management of agricultural land by people in accordance with local climates, natural environments specific to the local area have been created and maintained on agricultural land and grassland, providing precious habitats for many organisms. For example, it is reported that 5,668 species of organisms have been found in paddy fields in Japan. In Japan, there are many continental species which expanded their distribution from the continent to Japan and established themselves in Japan during the Ice Age. Many of them have lived in forest ecosystems and farm ecosystems that are periodically disturbed by humans, as well as living in natural grassland and natural wetlands found in the floodplains along rivers. However, due to reduced agricultural land areas, grassland areas and management activities as well as conversion of paddy fields into dry fields through field adjustment and the increase in concrete-finished channels, the number of organisms commonly found in these environments for many generations is now on the decrease.

The agricultural land area was about 61,000 km2 around 1960. The area continued to decrease in areas other than Hokkaido, particularly due to a decrease in the paddy field area, and fell below 50,000 km2 in the 2000s. The area of fields also began decreasing in the 1980s. Even in Hokkaido, the agricultural land area has been on the decrease since the 1990s. As the aging of farmers progresses and the shortages in the workforce worsen, the area of abandoned farmland increased. Its area increased three fold from 1,349 km2 in 1985 to 3,960 km2 in 2010.

In the high economic growth period which took place from around the 1960s, the development of agricultural land and waterways prioritizing economy and efficiency were pushed forward. In particular, the area of improved paddy fields expanded rapidly in the period between the 1960s and the late 1970s, and the percentage of improved paddy fields reached 60% in the 2000s. The development of agricultural land and waterways which prioritized economy and efficiency resulted in reduced numbers of ridges and waterways and disturbed the movement of organisms which used to go back and forth between rivers, waterways, reservoirs and paddy fields. As a consequence, this contributed to the deterioration of habitats for organisms and greatly affected biodiversity, however , the current development of agricultural land and waterways which takes into consideration the health of ecosystems is being promoted, along with those farming methods such as organic farming and winter flooding of paddy fields that recently receiving a lot of attention in some places.

Though grasslands are estimated to have encompassed 25,000 to 45,000 km2 of area in the beginning of the 1900s, it continued to decrease with the decreasing use of grassland as meadowlands to harvest roofing materials and pastureland for horses and cattle. The grassland area had dropped sharply to about 12,000 km2 by the 1960s and to about 4,000 km2 by the 1980s.

③Urban ecosystems

In Japan, as urbanization rapidly progressed after the end of the war, the disappearance, shrinkage and fragmentation of vegetated land such as forests and agricultural land progressed. This resulted in many cases of isolation of habitats for animals and plants on the fragmented vegetated land. When comparing land use in

the Kanto Region (which includes Tokyo) in 1976 and 2006, the area of urban districts increased by about 1,750 km2, while the forest area decreased by about 1,300 km2, the paddy field area decreased by about 550 km2 and the area of upland fields, orchards, etc. decreased by about 590 km2. In Yokohama City which is a city neighboring Tokyo, forests and agricultural land rapidly disappeared as housing land was developed in the 1960s and the 1970s. The area of vegetated land has continued to decrease since then, and the percentage covered with vegetation was reduced to about 30% by 2009, although it was about 50% in 1970.

When comparing the Tokyo of the 1970s and the 1990s, the distribution of larks which live on agricultural land and grassland has decreased. On the other hand, it is reported that the distribution of white-eyes has expanded due to the development of urban parks which increased the area of forest.

④Inland water ecosystems

Water is vital to numerous organisms living on the earth. Rivers and other water systems including lakes, wetlands and springs are the vital platform of biodiversity. Water systems constitute a core part of the ecological network which covers national land by connecting forests, agricultural land, cities, coastal areas, etc.

The habitats of organisms in inland water ecosystems such as rivers, lakes and wetlands were largely modified by the construction of river-crossing structures, land reclamation on lakes and wetlands, etc.

With regard to rivers, river-crossing structures are interrupting the flow between the upstreams and downstreams of rivers as well as the flow between rivers and the sea. It has been pointed out that the interruption of the flow could prevent organisms which swim up the rivers from migrating and prevent the movement of soil from the upper reaches to the lower reaches. In the National Survey on the Natural Environment, river sections from the estuary to the lower-to-middle reaches of 113 main rivers nationwide (such as Class A rivers) were surveyed in order to find out how far up the rivers the fish that would normally have been able to swim up the rivers in the past, such as the masu salmon (*Oncorhynchus masou*) and the ayu (*Plecoglossus altivelis*), could reach at the time of the survey. The results of the 1990s survey show that the number of rivers in which the fish could swim up less than 25% of the surveyed distance was 17 out of the 113 surveyed rivers, and the number of rivers in which the fish could swim up less than 50% of the surveyed distance was 46 out of the 113 surveyed rivers. Artificial shorelines are also increasing: in the 1990s, more than 20% of shorelines were artificially formed. The construction of artificial shorelines causes the loss of the ecotones of vegetation along riverbanks and degrades the quality of habitats for amphibians and fish.

As for lakes, 15% of the total area of the main natural lakes nationwide was drained or landfilled for land reclamation in the period between 1945 and the 1980s. About 30% of shorelines had been artificially formed by the 1980s.

Regarding wetlands, over 60% of the total area nationwide disappeared due to causes related to development, mainly the development of agricultural land and housing sites, in the period between around 1900 and the 1990s. In particular, the area of wetlands in Hokkaido greatly decreased from about 1,800 km2 in around 1900 to about 700 km2 by the 1990s.

In inland water ecosystems, the impacts caused by invasive alien species such as the largemouth bass (*Micropterus salmoides*) and the bluegill (*Lepomis macrochirus*) on existing ecosystems have been enormous. According to the national census on river environment, the largemouth bass and the bluegill have been confirmed in more than 60% of the surveyed rivers.

Although deterioration in water quality and eutrophication affected ecosystems in the past due to the inflow of household effluent, industrial effluent and pollutants leaking from agricultural land, etc., these problems have improved nationwide.

⑤Marine and coastal ecosystems

Coastal areas are where the land area and the sea area are in contact and interact with each other. Coastal areas contain brackish waters in estuaries where seawater mixes with fresh water, complex and varied coastlines and

neritic sea areas which extend in front of the coasts, including tidal flats, salt marshes, seagrass beds and coral reefs. They are closely related to people's lives through recreational uses and various industries including fisheries. They are also home to rich biodiversity. On the coasts, there are animals and plants endemic to each type of terrain such as sandy beaches, cliffs and tidal flats. Natural environments in beachside vegetation zones and on shores play a central part in the ecological network which covers the national land.

Coastal areas have been subject to severe environmental stresses such as land reclamation, water pollution, interruption or reduction of the water flow from rivers to estuaries and coastal waters, due to large concentrated populations and many industries. These stresses have caused a decrease in the area of tidal flats, etc. and the deterioration of the environment. Artificial coastlines increased and people were separated from the sea. Although the environmental load in coastal areas was successfully reduced, the nutritional balance was lost and is yet to recover and red tides and anoxic water masses are occurring in some waters. Major outbreaks of jellyfish have caused problems in recent years affecting fisheries and marine ecosystems.

Tidal flats often exist in deeply indented bays and tend to become subject to development. Therefore, the area of tidal flats was significantly reduced by landfilling and draining for land reclamation during the high economic growth period. The area of tidal flats was reduced by more than 40% over the 50 years between 1945 and 1995. The Japanese horseshoe crab (*Tachypleus tridentatus*) and the fiddler crab (*Uca arcuata*) living in tidal flats have been designated as threatened species and their threatened status is thought to be mainly caused by the deterioration of their habitats. Salt marshes influenced by seawater during high tides are important environments for biodiversity conservation as ecotones between the land and the sea. Threatened species (vascular plants) living in such ecotones are found on the coast of the Seto Inland Sea including the Sea of Suo, the Ariake Sea and Omura Bay.

Artificial coastlines rapidly increased in the 1960s and the 1970s. The length of coastlines where banks, revetments and other protection structures were developed has reached about 10,000 km, accounting for about 30% of the total length of coastlines. The length of natural coastlines which do not have artificial structures on the shorelines had decreased to about 50% of the total length of coastlines by 1998. There are even fewer coasts which have natural hinterland areas behind natural shoreline areas.

Seagrass beds made up of seaweed greatly decreased nationwide because of alterations such as land reclamation and water pollution. It is estimated that the area of sea grass beds, which was about 2,100 km2 nationwide in the 1970s, has been reduced by 40% in about 30 years. The rising seawater temperature has been pointed out to be one of the primary causes for the decrease (Table 1-2-1).

The area of coral communities in coral reefs located in the Amami and Ryukyu Islands deceased 4% in about 15 years from the latter half of the 1970s to around 1990. It is said that though the rate of coral cover in the Amami and Ryukyu Islands was almost 100% in the 1970s, about 60% of coral communities around 1990 had coral cover rates of less than 5%, and about 90% had coral cover rates of less than 50 %. Therefore, coral cover is generally shown to be at low levels. Primary factors which have been pointed out to have caused the deterioration in the quantity and quality of reef forming corals include the inflow of red soil (red soil run off from land), feeding damage by crown of thorns starfish and coral bleaching, in addition to development such as land reclamation. Around the Amami and Ryukyu Islands, there were outbreaks of the crown of thorns starfish in the 1970s, the 1980s and in the 2000s, which caused major damage. As a phenomenon which has been pointed out to be related to global warming, coral bleaching has been seen since the 1980s due to abnormally high water temperatures. In addition, it is predicted that ocean acidification affects the survival of organisms which form calcium carbonate skeletons and shells such as reef forming corals.

The development and alteration of coastal areas are affecting fishery resources. For example, the clam catch from tidal flats peaked in the 1960s and then rapidly decreased. The catch in recent years has dropped to about 3% of the peak period (Figure 1-2-1). In the Seto Inland Sea, there are indications that the disappearance of sandbanks caused by sea gravel extraction in the past may have led to a decrease in the population of the Japanese sand lance which is a cornerstone species in the food chain.

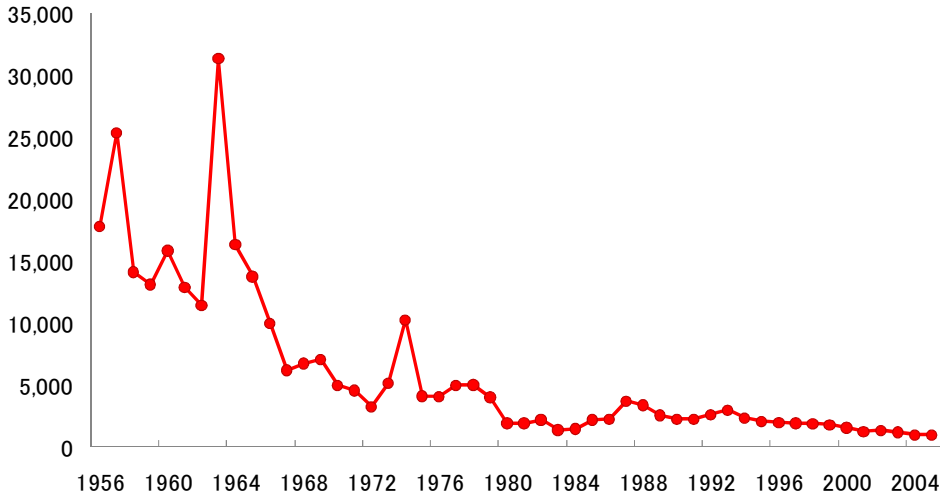
When looking at the ocean as a whole, the ecosystems are also affected by waste and harmful chemical substances emitted from various countries' territorial land as well as oil leaking from vessels.

Table 1-2-1 Changes in the scale of coastal ecosystems

	1945	1973	1978	1984	1992 1994 (Note 1)	1998
Area of tidelands (km^2) (Note 2)	841 **(100)**		553		514	496 **(59)**
Area of underwater plant beds (km^2)		2,097 **(100)**	2,076		2,012	1,455 **(69)**
Area of coral communities within reefs (km^2)			357 **(100)**		342 **(96)**	
Length of natural coasts (km) (Note 3)			18,717 **(100)**	18,155	17,859	17,414 **(93)**
Length of beaches (km)			9,817	9,326	9,089	8,722
Length of rocky shores (km)			8,901	8,829	8,770	8,692

Note 1: Data from 1994 was used for the area of coral communities within reefs and data from 1992 was used for other ecosystems.
Note 2: The category of tidelands refers to existing ones that meet the following requirements: (1) The maximum width of the drained area between the high-water line and low-water line is at least 100 m. (2) The area of continuously drained area during the spring tide is at least 0.1 km^2. (3) The bottom conditions are fluid and are often shifting (gravel, sand, sandy mud, or mud).
Note 3: Natural coasts refer to "coasts without artificial alteration (along shorelines) and that maintain natural conditions (with no man-made structures along the shorelines)." Whether there are artificial structures in the hinterland areas is not relevant.
Source: Ministry of the Environment, 1978: National Survey on the Natural Environment (2nd), Ministry of the Environment, 1989-1992: National Survey on the Natural Environment (3rd), Ministry of the Environment, 1997-2001: National Survey on the Natural Environment (5th).

Figure 1-2-1 Trends in clam species catches



Note 1: Clam species include common orient clams (*Meretrix lusoria*), Korean clams (*Meretrix lamarckii*), and Chinese clams (*Meretrix petechialis*).
Source: Ministry of Agriculture, Forestry and Fisheries, 2005: Annual Report of Catch Statistics on Fishery and Aquaculture

⑥Island ecosystems

In addition to the four main islands - Hokkaido, Honshu, Shikoku and Kyushu, Japan is believed to have over 6,800 large and small islands. There are 400 islands that are inhabited by humans. Since islands are

surrounded by the sea which limits the traffic of organisms, there are cases where native biota which can no longer be observed in neighboring areas still remains in the limited space of an island.

Island ecosystems, including the Nansei Islands which were repeatedly connected with and separated from the continent and the Ogasawara Islands which are isolated oceanic islands, have characteristic biotas containing many endemic species. On each island, unique ecosystems have formed in a small area, based on delicate balances. Therefore, they have vulnerable ecosystems with easily destroyed habitats of wild animals and plants which tend to be affected by invasion of alien species.

On the Nansei Islands, endemic species account for 73% of mammals, 80% of terrestrial reptiles and 79% of amphibians which live on the island (the percentages are based on the number of species and subspecies). On the Ogasawara Islands, 95% of land snails and 37% of plants inhabiting the islands are endemic species(the percentages are based on the number of species and subspecies).

According to the Red List of the Ministry of the Environment, out of all the endemic species (including subspecies) on the Nansei Islands, 71% of mammals, 44% of reptiles and 47% of amphibians are considered to be threatened species. Out of all the endemic species on the Ogasawara Islands, 48% of land snails and 60% of plants are considered to be threatened species. “Developments,” “alien species” and “capture and gathering” can be considered as main causes for the decreases.

When looking at land use in Okinawa, 77 km2 of forests were converted to agricultural land or urban districts in about three decades starting from the 1970s. These developments are thought to have caused the shrinkage and fragmentation of habitats. On islands where unique ecosystems have developed in isolated environments, endemic species such as the Amami rabbit (*Pentalagus furnessi*), the Okinawa rail (*Gallirallus okinawae*) and the Kuroiwa's ground gecko (*Goniurosaurus kuroiwae kuroiwae*) are seriously affected by the mongoose (*Herpestes auropunctatus*) which is an invasive alien species, that preys on these endemic animals. In addition, the effects of escaped or abandoned pets and livestock are becoming serious including the predation of rare species by feral cats, vegetation destruction by feral goats and the predation of seabirds by the black rat (*Rattus rattus*). Gathering and capture for ornamental purposes are also a major cause of the population decreases.

(2) The current situation of threatened wildlife

Since the Ministry of the Environment published the Red List in 1991 in order to understand the threatened wild species situation in Japan, it has revised the Red List periodically. The ministry published the 4th Red List in August 2012 and February 2013. The number of threatened species listed on the 4th Red List was 3,597 including all 10 taxonomic groups (Table 1-2-2), which is 442 more than the number of threatened species listed on the 3rd Red List published in FY2006 and FY2007.

In the 4th Red List, three mammal species, one bird species, one insect species, one shellfish species and two plant I (vascular plant) species were newly found to be extinct. On the other hand, there were species which had been considered to be extinct, but were re-categorized as not extinct due to rediscoveries, etc. These species include: one fish species (*Onchorhynchus kawamurae*); four shellfish species (*Ogasawarae hirasei, Ogasawarae metamorpha, Conacmella vagans* and *Hirasea nesiotica nesiotica*); three plant I (vascular plant) species (*Dryopteris shibipedis, Thelypteris aurita* and *Thelypteris erubescens*); and four plant II (non-vascular plant) species (*Cyathodium cavernarum, Nitella flexilis* C. Agardh *var. bifurcata* Kasaki, *Siphula decumbens* Nyl. and *Asterinella hiugensis* I.Hino & Hidaka). This was the good news, but overall it was found that wild organisms in Japan are still in a serious situation. The following explains the outline of the 4th Red List published in 2012, for each taxonomic group.

Table 1-2-2 Number of threatened species of wild fauna and flora in Japan

(As of April 1, 2013)

	Taxonomic groups	Number of species to be appraised (a)	Extinct	Extinct in the wild	Threatened species (b) Critically endangered Category IA	Threatened species (b) Critically endangered Category IB	Threatened species (b) Endangered Category II	Near threatened	Data deficient	Total number of species provided	Percentage of threatened species (b/a)
			EX	EW	CR	EN	VU	NT	DD		
Animals	Mammals	160 (180)	7 (4)	0 (0)	34 (42)	24 (35) / 12 (15)	12 (20) / 10 (7)	17 (18)	5 (9)	63 (73)	21%
	Birds	Approx. 700 (Approx. 700)	14 (13)	1 (1)	97 (92)	54 (53) / 23 (21)	31 (32) / 43 (39)	21 (18)	17 (17)	150 (141)	14%
	Reptiles	98 (98)	0 (0)	0 (0)	36 (31)	13 (13) / 4 (3)	9 (10) / 23 (18)	17 (17)	3 (5)	56 (53)	37%
	Amphibians	66 (62)	0 (0)	0 (0)	22 (21)	11 (10) / 1 (1)	10 (9) / 11 (11)	20 (14)	1 (1)	43 (36)	33%
	Brackish/Fresh water fish	Approx. 400 (Approx. 400)	3 (4)	1 (0)	167 (144)	123 (109) / 69 (61)	54 (48) / 44 (35)	34 (26)	33 (39)	238 (213)	42%
	Insects	Approx. 32,000 (Approx. 30,000)	4 (3)	0 (0)	358 (239)	171 (110) / 65	106 / 187 (129)	353 (200)	153 (122)	868 (564)	1%
	Shellfish	Approx. 3,200 (Approx. 1,100)	19 (22)	0 (0)	563 (377)	244(163)	319 (214)	451 (275)	93 (73)	1126 (747)	16%
	Other invertebrates	Approx. 5,300 (Approx. 4,200)	0 (0)	1 (1)	61(56)	20 (17)	41 (39)	42 (40)	42 (39)	146 (136)	1%
	Subtotal of animal		47 (46)	3 (2)	1338 (1002)	660 (510)	678 (492)	955 (608)	347 (305)	2690 (1963)	—
Plants, etc.	Vascular plants	Approx. 7,000 (Approx. 7,000)	32 (33)	10 (8)	1779 (1690)	1038 (1014) / 519 (523)	519 (491) / 741 (676)	297 (255)	37 (32)	2155 (2018)	25%
	Plants except for vascular plants	Approx. 9,400* (Approx. 25,300)	34 (41)	2 (2)	480 (463)	313 (287)	167 (176)	125 (118)	157 (172)	798 (796)	5%
	Subtotal of plants		66 (74)	12 (10)	2259 (2153)	1351 (1301)	908 (852)	422 (373)	194 (204)	2953 (2814)	—
	Total for 10 taxonomic groups		113 (120)	15 (12)	3597 (3155)	2011 (1811)	1586 (1344)	1377 (981)	541 (509)	5643 (4777)	—

(1) The number of species of animals to be appraised (including subspecies) is based on the "Japanese wild fauna and flora list (Ministry of the Environment version 1993, 1995, 1998)", etc.
(2) Of the plants, etc., the number of species of vascular plants to be appraised (including subspecies) is based on the summary by the Japanese Society for Plant Systematics.
(3) Of the plants, etc., the number of species except for vascular plants (mosses, algae, lichens, and fungi) to be appraised (including subspecies) is based on a survey by the Ministry of the Environment.
(4) The numbers in brackets indicate the number of species provided in the previous 3rd red list (published in 2006 and 2007).
(5) As for insects, critically endangered + endangered is divided into category IA (CR) and category IB (EN) from this time.
(6) As for shellfish, other invertebrates, and plants except for vascular plants, critically endangered + endangered is not divided into category IA and category IB.

* Species that cannot be grossly-appraised are excluded from the number of species.

The categories are as follows;
Extinct: Species that are already considered to have become extinct in Japan
Extinct in the wild: Species that live in captivity/culture or live in the wild but are only clearly found outside the area of their natural distribution
Critically endangered + endangered: Species that are in danger of extinction
Vulnerable: Species that are increasingly in danger of extinction
Near threatened: Species whose basis for survival is vulnerable
Data deficient: Species with insufficient information for appraisal

Material: Ministry of the Environment

Regarding mammals, the total number of threatened species excluding marine mammals which do not land on shore (other than the dugong (*Dugong dugon*) that depend on neritic areas) was 34, decreasing by eight species from the previous list. This is mainly because three species formerly designated as threatened species were newly determined as extinct species, the taxon subject to the assessment were rearranged (consolidation of subspecies) and the amount of available information about the survival state of mammals increased through the implementation of surveys. Therefore, the decreased number of threatened species cannot necessarily be considered as a sign of improvement in the survival state of mammals. The Japanese river-otter (*Lutra lutra nippon*) (the Hokkaido subspecies), the Japanese river-otter (*Lutra lutra nippon*) (the subspecies in Honshu and southwards) and *Rhinolophus pumilus miyakonis* were newly determined to have become extinct since they have not been detected in habitation surveys, etc. for a long period of time. On the other hand, the harbor seal (*Phoca vitulina*) and the Steller's sea lion (*Eumetopias jubatus*) were ranked lower than before due to the increasing populations detected in recent surveys.

As for birds, the total number of threatened species was 97, an increase of five species from the previous list. When looking at changes in rank in detail, there are eight species that ranked lower than before, but 18 species ranked higher than before including nine species that were newly included in the threatened species. Thus many species were recognized as being more threatened than before. For example, five species including the Kentish plover (*Charadrius alexandrinus*) were newly designated as threatened species due to population decreases confirmed through monitoring surveys of shore birds conducted by the Ministry of the Environment and others. With regard to the Japanese crested ibis (*Nipponia Nippon*), for which a program to return them to the wild is in progress on Sado Island, breeding in the wild succeeded for the first time in the spring of 2012. However, in reference to the IUCN (International Union for Conservation of Nature) criterion that the less

threatened survival state needs to be maintained for five years or more in order to move a species to a lower rank, the Japanese crested ibis remained in the same category as before, which is "extinct in the wild."

As for reptiles, the total number of threatened species was 36, an increase of five species from the previous list. There was no species which ranked lower than before while there were 10 species which were ranked higher or newly added to the list. This indicates that the survival status of reptiles in Japan remains unimproved. In particular, many reptiles on the Nansei Islands are in a critical state and there is concern about the deterioration of habitats and the impact of alien species.

As for amphibian species, the total number of threatened species was 22, an increase of one species from the previous list. Since the last revision, many species were further divided into different species before they were assessed. The black-spotted pond frog (*Rana nigromaculata*), which is a familiar species of frog, was newly designated as "near threatened" although it was not included in the threatened species. Therefore, it became clear that the risk of extinction is increasing even for species which are widespread in Japan.

As for insects, the total number of threatened species increased by 119 from the previous list and reached 358. The number of species increased particularly because there was progress in the assessment of moths and beetles. It was also pointed out that there was degradation of all types of habitats in flat areas other than forests (such as grassland, dry riverbeds and wetlands). In addition, impacts caused by the degradation of waterside habitats around human settlements, predation by alien species and overexploitation for breeding purposes were pointed out since many water bug species including whirligig beetles were ranked higher than before.

With regard to shellfish, the total number of threatened species increased by 186 from the previous list to 563. Many of the species were newly added to the list because species inhabiting tidal flats, etc. in deeply indented bays were newly added to the species subject to the assessment. There were no freshwater bivalve species ranked lower than before, which confirms that the species are still in a serious situation due to the decrease in areas suitable for their habitation. Many land snail species endemic to the Ogasawara Islands (registered as a world natural heritage site) were ranked higher than before, which revealed the critical situation that these species are in.

As for other invertebrates, the total number of threatened species was 61, an increase of five species from the previous list. The main factor for the increase was the new designation of shrimp and crab species on the Nansei Islands. The results show that many species are in a critical state, including *Amamiku occulta*. Three species were ranked lower than before due to the discovery of new habitats, which is the result of progress in the accumulation of knowledge.

With respect to plants I (vascular plants), the total number of threatened species increased by 89 to reach 1,779. It was discovered that feeding damage caused by the sika deer (*Cervus nippon)* and changes in habitats due to progressing vegetation succession on wetlands and grassland became the main factor affecting many species. In addition, there were 15 species which were not found even in known habitats in on-site surveys and were thought to have become almost extinct. Further, there are species whose survival state is worsening, due to overexploitation for cultivation and ornamental purposes.

As for plants II (non-vascular plants), the total number of threatened species was 480, an increase of 17 from the previous list. This shows that the deterioration of the survival state within this taxon is also progressing. There were also changes in rank due to newly obtained information, including the rediscovery of one species each in the bryophytes, algae, lichens and fungi which were previously believed to have become extinct.

(3) Impacts of the Great East Japan Earthquake on biodiversity

The natural environment of the Pacific coast in the Tohoku Region was greatly influenced by the Great East Japan Earthquake which occurred in March 2011, because it caused major changes to the topography of the area which provides the foundation for ecosystems. The earthquake caused land subsidence and the tsunami moved vast amounts of soil. The affected area contains many priority areas for biodiversity conservation

including some of the 500 Important Wetlands in Japan and Important Bird Areas (IBA). This therefore was an opportunity to reacknowledge that the coastal ecosystems such as coastal forests can contribute to disaster risk reduction, and it is important to maintain healthy ecosystems in order to protect the socio-economic transactions and the resilience of them and the ecosystems.

Although much of the area inundated by the tsunami which occurred after the earthquake (about 576 km2 from Aomori to Chiba) was farmland and urban districts, the tsunami also had great impacts on the vegetation in the beach areas including afforested land planted with the Japanese black pine (*Pinus thunbegii*) and the Japanese red pine (*Pinus densiflora*), vegetation in wetlands, rivers, ponds and marshes, secondary grassland and sand-dune plants. After the tsunami, many affected areas became covered by weeds or were converted to land prepared for development and yards for storing debris. Such places were found all over the flooded areas. In the coastal areas, about 497 hectares of lands covered with sand-dune vegetation were lost, and about 829 hectares of coastal forests were lost. Many of these areas were converted to non-natural sites such as land prepared for development or left to become wasteland. Therefore, natural environment has had changed dramatically. In Takata-matsubara in Iwate, which was designated by the national government as a place of scenic beauty and a National Park which had a beautiful stretch of sandy seashore with pine trees, only one tree out of 70,000 miraculously survived while all the rest were flattened. The tree, which was named 'the pine tree of hope,' unfortunately died in the end. Nebama Beach in Kamaishi City, Iwate was a sandbank extending over about 500 meters and was known as the only habitat of a threatened insect species Tiger Beetle (*Chaetodera laetescripta*) in Iwate. However, the entire sandbank disappeared after the earthquake.

The tidal flats extended from Aomori to Chiba, but many of them were affected by the tsunami, particularly in the innermost part of rias coasts in the southern part of the Sanriku Coast as well as the coastlines around Matsushima Bay and Sendai Bay. The degree of impact varied from area to area. On Nebama Beach mentioned above, tidal flats behind the sandbank have disappeared. On the Gamo Tidal Flats in Miyagi, the lagoons were buried in soil right after the earthquake and its topography is still changing greatly. The composition of species living on some tidal flats has changed significantly due to the changes in topography and the bottom materials in tidal flats in coastal areas.

Much of the eel grass (*Zostera marina*) and other seaweeds which often grow on the sands of neritic areas in the innermost part of the coasts have disappeared or had their distribution areas reduced due to the impact of the tsunami. On the other hand, some eel grass plants thought to have germinated from seeds after the tsunami were found. With regard to seaweed, the impact on seaweed communities is likely to be relatively small. This is because they are often found at the mouths of bays facing the ocean and also because many of the seaweed species which dominate the communities were annual plants (such as brown seaweed (*Undaria pinnatifida*) and kelp (*Laminaria japonica*)).

With regard to seabirds, there was no direct impact on birds because the earthquake occurred before they flew to the area for breeding. However, some breeding grounds were affected, for example, rocky tracts with nesting holes were destroyed, vegetation and litter was removed.

In back swamps along the coastline which were used as agricultural land, the germination of a threatened species *Monochoria korsakowii* from seeds which were dormant in the soil and medaka ricefish (*Oryzias sakaizumii*) swimming in shoals have been observed. The earthquake and the tsunami brought about major disasters for human society, but the recovery of the ecosystems is seen in back swamps which are maintained or created through minor and major disturbances.

The ecosystems are still changing and it is necessary to continue careful monitoring, including the monitoring of whether or not the ecosystems which have undergone major changes will recover.

Large amounts of radioactive materials which were released into the atmosphere and the ocean as a result of the accident at the Fukushima Daiichi Nuclear Power Station pose a concern for the impacts on wild animals and plants. Increases in radioactive materials contained in sea-bottom soil have been confirmed on the coast. There are only limited cases worldwide where large amounts of radioactive materials were released into the natural environment and findings about the impact of radioactive materials on wild animals and plants is

limited. Therefore, it has been pointed out that efforts need to be made to understand the impacts of radiation on wildlife. It has also been pointed out that efforts should be made to understand the effects of changes in the relationships between humans and nature in the areas around the Fukushima Daiichi Nuclear Power Station on wildlife habitation and ecosystems.

Question 3. What are the main threats to biodiversity?

1.3 The structure of the biodiversity crisis

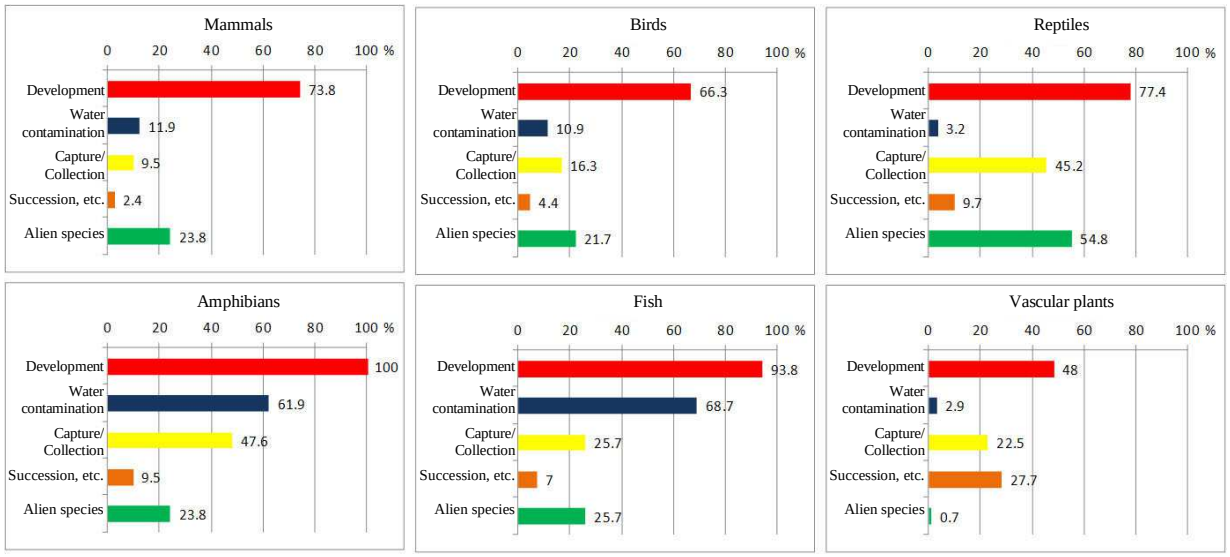
The structure of the biodiversity crisis in Japan caused by human-related causes can be summarized into three categories based on analysis of its causes and results: (1) the first crisis was caused by human activities and development; (2) the second crisis was caused by reduced human activities; and (3) the third crisis was caused by artificially introduced factors. In addition, changes in the global environment including global warming are affecting biodiversity. These impacts are summarized as the fourth crisis separated from the above-mentioned three crises because, although human activities constitute one cause of the impacts, it is difficult to specify direct causes, these impacts have global implications and they are caused by a combination of human activities and global environmental changes. Details of these crises are omitted here because they are explained in the 4th national report and the National Biodiversity Strategy of Japan 2010-2020.

(1) The four crises of biodiversity

①First crisis (caused by human activities including development)

The first crisis is due to negative factors generated by human activities, including development such as land reclamation in coastal areas, deforestation and overexploitation (Figure 1-3-1). The crisis of decreases in populations and the destruction and deterioration of wildlife habitats continues.

Figure 1-3-1 Number of threatened species by factor and by species/taxonomic group



②Second crisis (caused by reduced human activities)

The second crisis is caused by reduced human intervention in nature owing to the changes to industrial structures and resource utilization methods as well as the decreased vibrancy due to a decrease in population and the aging of people. As a result, species specific to these secondary natural environment which have been sustained through human use are being threatened. The populations of sika deer (*Cervus nippon*) and other animals have increased and expanded their distributions, resulting in serious impacts on ecosystems.

③Third crisis (caused by artificially-introduced factors)

The third crisis is caused by factors introduced by modern lifestyles, such as alien species and chemical substances. There are continuous problems including changes to endemic biotas and ecosystems by alien species as well as impacts and the risk of impact of chemical substances on ecosystems.

One background factor for the alien species problem is the rapid increase in the movement of both humans and materials due to the globalization of the economy and society which advanced rapidly in the 50 years after the end of the war. For example, the total value of imports increased to 68 trillion yen in 2011. This shows that Japan's connections with other parts of the world have further increased through the trading of materials in recent years. When looking at people's movement across national borders, the annual number of people entering Japan increased from 0.58 million in 1965 to 26 million in 2010, which is 45 times the 1965 level.

Furthermore, Japan imports large numbers of animals and plants including pets. Imported living animals in 2011 included: about 240,000 mammals (excluding livestock) such as hamsters; about 20,000 birds (excluding poultry); about 320,000 reptiles such as tortoises and turtles; about 40 million insects; and about 40 million ornamental fish. It is expected that the risk of the further introduction of alien species will increase as Asian economies, which trade large volumes of goods with Japan, develop further.

④Fourth crisis (caused by changes in the global environment)
The fourth crisis is caused by changes in the global environment including global warming, climate change (such as more frequent strong typhoons and changes in precipitation), decrease in primary production in the oceans and the acidification of oceans. There are continuous problems including the loss of species, serious impacts and potential impacts on vulnerable ecosystems.

(2) Japan Biodiversity Outlook (JBO)
In order to comprehensively assess the current situation for biodiversity loss in Japan, the Japan Biodiversity Outlook was compiled in May 2010. It was the result of two years of discussions starting in FY2008 through meetings of the Japan Biodiversity Outlook Science Committee made up of experts from different fields. 208 experts cooperated with the process. The committee evaluated the loss of biodiversity in Japan for the period between the latter half of the 1950s and 2010 and produced the five main conclusions as shown below (Table 1-3-1).

① Loss of biodiversity as a result of human activities in Japan has affected all ecosystems, and the loss is continuing on the whole.

② The degree of biodiversity loss has been especially large in inland water ecosystems, marine and coastal ecosystems, and island ecosystems. The trend towards biodiversity loss is continuing at present.

③ As for the drivers of the loss, the "first crisis," particularly development, has had the greatest impact, but the speed at which loss attributable to this crisis has slightly abated. The "second crisis" continues to intensify. Furthermore, among all the factors falling under the "third crisis," the effects of alien species are particularly prominent in recent years. The "climate change crisis," which is the fourth crisis, poses serious concerns for certain ecosystems that are particularly vulnerable. Various countermeasures have been taken to address these crises. These countermeasures have been effective to a certain degree, but given the major socioeconomic changes in Japan that indirectly drive biodiversity loss, they have not been sufficiently effective.

④ The Japanese people currently enjoy lifestyles characterized by material wealth and convenience, but for the past 50 years those lifestyles have meant the domestic loss of biodiversity and dependence on the supply of ecosystem services from overseas. From 2010 onwards, the lingering effects of past development (first crisis), the increasing seriousness of the problem of reduced use and management of *Satoyama* landscapes (second crisis), the establishment and further encroachment by alien species (third crisis), rising temperatures (global warming crisis), and other related factors are expected to result in further loss. Thorough response measures, including those that address indirect drivers, are necessary. For that purpose, it is important to build consensus at the local level.

⑤Some biodiversity loss in inland water ecosystems, island ecosystems, and marine and coastal ecosystems may in the future transform into a grave loss, causing irreversible changes or having other serious consequences.

Table 1-3-1 Biodiversity loss up to 2010

	Current state of the loss and trends		Drivers of the loss (degree of impact) and current trends				
	Degree of loss from the original state	Degree of loss from the state as of the second half of the 1950s and current trends	First crisis: Development, direct use and water pollution	Second crisis: Reduction in use and management	Third crisis: Invasive alien species and chemical compounds	Climate change crisis	Other
Forest and mountain systems						 *1	
Cultivated systems	–						• Decrease in local varieties of crops and livestock
Urban systems	–			–			
Inland water systems					 *2		
Marine and coastal systems				–	 *3		• Outbreaks of coral predators • Coralline flat
Island systems				–			

Subject of the assessment	State				Drivers			
	Degree of the current loss		Trend in the current loss		Degree of impact during the assessment period		Current trend of the impact	
Legend	Not Lost		Recovering		Weak		Decreasing	
	Not significantly lost		Same		Medium		Same	
	Lost		Being lost		Strong		Increasing	
	Significantly lost		Being rapidly lost		Very strong		Increasing rapidly	

Note: The dashed lines for assessing the degree of impact indicate insufficient data.
Note: "*" indicates multiple factors and data related to the indicator in question, as well as existing factors and data that show trends that differ from current assessments of the degrees, effects, and trends of the overall loss.
*1: The degree of impact on alpine ecosystems has been and continues to be serious.
*2, *3: While the problem of chemical compounds has been mitigated to some extent, the problem of invasive alien species is serious.

Question 4. What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?

1.4 The impacts of changes in biodiversity on ecosystem services, socio-economy, and culture

(1) Changes in the distribution of medium and large mammals and the expansion of conflicts

As a result of a comparison between the Sixth National Survey on the Natural Environment: Report of the distributional survey of Japanese animals (Mammals) conducted from FY2000 to FY2003, and the nationwide distribution survey in 1978, the distribution areas for all seven assessed species (the sika deer (*Cervus nippon*), the Japanese serow (*Capricornis crispus*), the Japanese macaque (*Macaca fuscata*), bears (*Ursus arctos, U. thibetanus*), the wild boar (*Sus scrofa*), foxes (*Vulpes vulpes*) and raccoon dogs (*Nyctereutes procyonides*)) were on the increase. In particular, the nationwide species occupation rate of the sika deer increased from 24% to 42% and that of the Japanese serow increased from 17% to 29%. When predicting the future expansion of the distribution of the sika deer based on the above survey results, it is likely that there will be further expansion of the distribution in Western Japan and the Pacific side of East Japan which have low snowfall levels. The combination of several social and natural factors is possibly the cause of the expansion in distribution. These factors include: depopulation and the aging of communities causing an increase in abandoned farmland and a decrease in snowfall in heavy snowfall areas in the Tohoku Region, etc., which have created an environment preferable for medium and large mammals; and aging and decreasing numbers of hunters which have caused increases in the animal populations.

As the populations and the distribution range of the medium and large mammals increase, the damage and impacts on agriculture, forestry and natural ecosystems are becoming serious. For example, the amount of damage to farm produce by animals and birds was 22.6 billion yen in FY2011. Although the number of pest mammals and birds caught including the sika deer (*Cervus nippon*) and the wild boar (*Sus scrofa*) has increased in an effort to prevent damage, there is no sign of a decrease in the amount of damage. In addition, impacts on natural ecosystems have been observed in 20 National Parks in the Southern Alps, Nikko, etc., including feeding damage on rare alpine plants and debarking in forests caused by the sika deer. There were 73 incidents involving bears which caused injury or death to humans and over 3,200 animals were captured in FY2012.

In order to tackle the problems caused by animals and birds that conflict with human lives and ecosystems associated with the recent rapid increases in distribution and population, it is necessary more than ever to take comprehensive conservation and management measures to avoid such conflicts. These measures should include damage prevention, habitat management and population management, while responding to the decrease in number and aging of hunters and developing leaders for local conservation and management.

(2) Alien species

The effects of invasive alien species on ecosystems and human lives have become increasingly serious in recent years. Although the enforcement of the Invasive Alien Species Act has achieved some positive results, for example invigorating alien species control activities, it has not succeeded in controlling the expansion of the distribution of alien species which have become established in Japan, as can be seen from the limited number of cases of successful eradication or containment of Invasive Alien Species. It is expected that the damage will continue to increase in the future. In particular, alien species are greatly affecting important biodiversity conservation areas including islands which have endemic ecosystems.

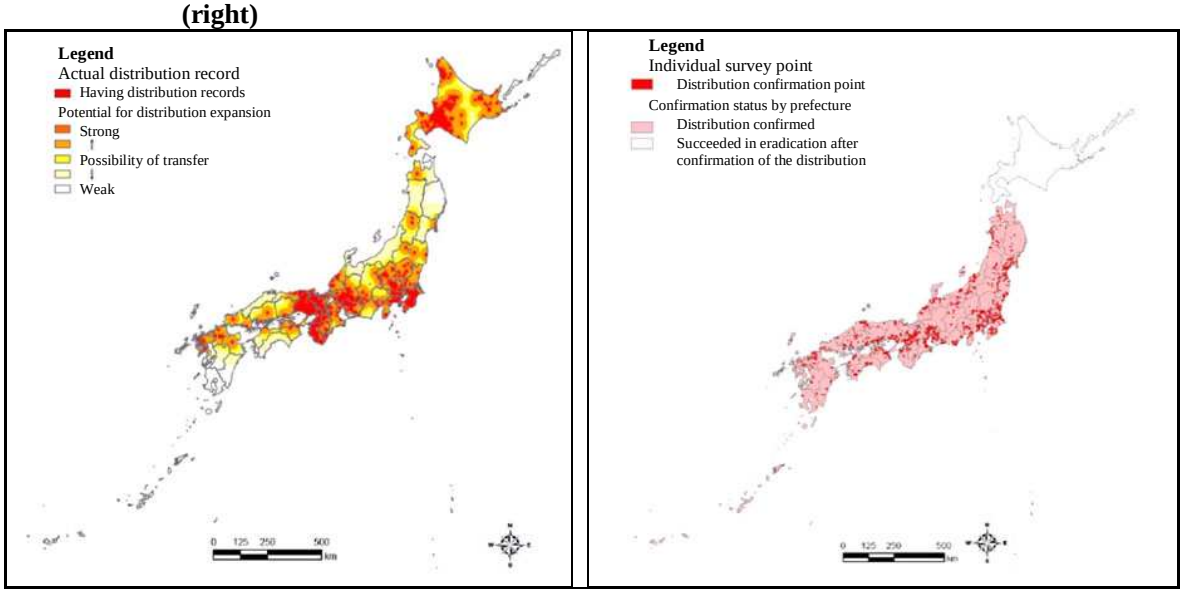
For example, the mongoose (*Herpestes auropunctatus*) was introduced on Okinawa Island in 1910 and Amami-oshima Island in around 1979 with the aim of controlling the habu (*Protobothrops flavoviridis*) and rats that damaged farm produce. They then expanded their habitats year by year up to recently and have become a major threat as a predator of rare wildlife species such as the Okinawa rail (*Gallirallus okinawae*) and the Amami rabbit (*Pentalagus furnessi*). It is estimated that the population of mongooses on Okinawa Island had increased from the original several dozens to about 30,000 by 2003. In addition, inhabitation of the mongoose in Kagoshima City was also confirmed in 2009.

Raccoons (*Procyon lotor*), which were introduced as pets, established themselves in the wild and have

expanded their distribution. Although large populations were found only in areas around Sapporo city in Hokkaido and areas around the borders of Aichi, Gifu and Nagano Prefectures in the mid-1990s, distributions in 36 prefectures were reported in a survey conducted in 2006 (Figure 1-4-1). There are reports of the destruction of heron colonies and the predation of native species such as salamanders as well as damage to farm produce which were likely caused by raccoons. They caused damage to farm produce of approximately 350 million yen nationwide in FY2010.

Regarding the largemouth bass (*Micropterus salmoides*) and the bluegill (*Lepomis macrochirus*), the impacts on ecosystems and fisheries caused by their predation of native species have been observed in various areas. The largemouth bass was introduced as a fishery resource and was found in five prefectures in the 1950s. Their distribution area rapidly expanded with intentional releases in the 1970s and their habitats were observed in all prefectures except for Hokkaido by the 1990s (Figure 1-4-2). They were found in Hokkaido in 2001, but they were successfully eradicated by 2007. However, they have become established in other prefectures and control efforts are still ongoing.

Figure 1-4-1 Distribution of and expansion forecast for the invasive alien species of Raccoon (left)
Figure 1-4-2 Distribution of and expansion forecast for the invasive alien species of Largemouth bass (right)



The buff-tailed bumblebee (*Bombus terrestris*) used for pollination of farm crops may have impacts on ecosystems through competition with native bumblebees over nest sites, hybridization which causes genetic disturbances and the inhibition of propagation of wild plants due to their habit of sucking nectar without contributing to pollination of plants. About 3,000 colonies were distributed in 1992, but the number increased to about 70,000 by 2004. The number distributed was slightly reduced after they were designated as an invasive alien species in 2006 (reduced to about 56,000 colonies in 2011), but they have become established in wider areas of Hokkaido, where a decrease in the native bumblebee population has been observed.

Weeping lovegrass (*Eragrostis curvula*) was introduced as vegetation cover in 1959. It has become established in areas nationwide, ranging from Hokkaido which is the north island of Japan to Okinawa in the south and there are concerns that it is affecting ecosystems by driving out native plant species. There are cases where the populations of threatened species such as *Aster Kantoensis* were considerably reduced by the thickly growing weeping lovegrass. Control measures such as the removal of weeping lovegrass are being taken in various parts of Japan.

There are also cases where species living in Japan are introduced into other areas of Japan which were originally not inhabited by the species and they have great impacts on the ecosystems of the areas. For example, on Miyake Island in the Izu Islands, the Japanese weasel (*Mustela itatsi*) was released in order to

eradicate rats in the 1970s and 1980s. This caused considerable decreases in the populations of the Okada's blue-tailed skink (*Plestiodon latiscutatus*) and the Izu Islands thrush (*Turdus celaenops*). The population of the Okada's blue-tailed skink, which is estimated to have been about five million before the introduction of the Japanese weasel (*Mustela itatsi*), was dramatically reduced to 50,000-100,000 by 1985 and to several hundreds by 2000, even with an optimistic estimation. There are also cases where livestock and pet species become established in the wild and affect ecosystems, as can be seen with feral goats on the Ogasawara Islands and feral cats in the Yanbaru area on Okinawa Island.

The impacts of organisms which are unintentionally introduced via imported goods, such as timber, crops and marine products are also a concern. For example, the establishment of the Argentine ant (*Linepithema humile*) which was first observed in Hiroshima in 1993 is causing concerns that they are driving out native ants due to their aggressive character. Established populations were later found in Hyogo, Yamaguchi, Osaka, Aichi, Tokyo and other parts of Japan. Many of the sites where established populations were confirmed were in distribution hubs such as harbors and this suggests that they have invaded the sites and expanded their habitats through the distribution of imported goods, etc. The *Euspira fortunei* from China and the Korean Peninsula was originally only found in very limited Japanese waters such as the Ariake Sea. However, they have invaded the Tohoku Region and other parts of Japan in recent years and are eating the flesh of the Japanese littleneck (*Ruditapes philippinarum*) by boring through the shells. It is thought that the release of Japanese littleneck stock from China in Japan caused the unintentional introduction of *Laguncula pulchella* from the continent along with the stock.

(3) Impacts of changes in the global environment on biodiversity

There is a concern that changes in the global environment will have serious effects on biodiversity, including the disturbance of ecosystems and the extinction of species. The Working Group I contribution to the IPCC (Intergovernmental Panel on Climate Change) Fifth Assessment Report (2013) shows that warming of the climate system is unequivocal and that it is extremely likely that human influence has been the dominant cause of the observed warming. It also states that the globally averaged combined land and ocean surface temperature data show a warming of 0.85 (0.65 to 1.06) ℃, over the period 1880 to 2012. It also explains that each of the last three decades has been successively warmer at the Earth’s surface than any preceding decade since 1850. The report states that limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

Biodiversity is particularly vulnerable to climate change. The Fourth Assessment Report (2007) of the IPCC predicts that, when the increase in the global average temperature exceeds 1.5 to 2.5℃, 20% to 30% of animals and plants that have been assessed will be at an increased risk of extinction. If the increase exceeds 4.0℃, it is predicted that there will be a grave global extinction of 40% or more of species. It is also estimated that an increase in the sea surface temperature by about 1 to 3℃ will cause the frequent occurrence of coral bleaching and extinction over wide areas.

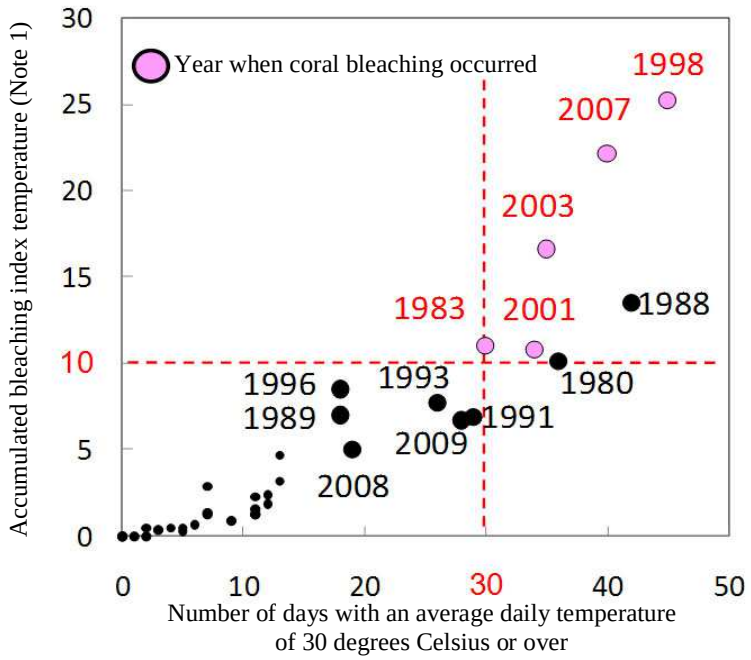
Regarding the changes in the phenology, the blooming date of the Yoshino cherry (*Prunus×yedoensis*) that marks the beginning of spring has moved forward by about 4.2 days in the past 50 years since the Japan Meteorological Agency started phenological observation in 1953. According to a survey for the breeding ecology of the red-cheeked starling (*Agropsar philippensis*) in Niigata City, the egg-laying time has become earlier (by 0.73 days per year) since 1978. It is surmised that this may be related to temperature increases in Niigata City as well as in Naha City in Okinawa situated on their travel route.

It is predicted that disturbances to forests and coral reefs are likely to increase due to an increase in the frequency of strong typhoons as well as because of the direct impact of temperature increases. For example, although the agitation of seawater by typhoons has an effect of curbing coral bleaching by lowering the seawater temperature, it is thought that the expansion of coral reef destruction is likely as the occurrence of strong typhoons becomes more frequent. As the precipitation changes, the snowfall and the streamflow change and this could have significant impacts on the distribution of organisms and ecosystems. For example, snowfall is thought to have effects on the habitation of the sika deer (*Cervus nippon*) and it has been pointed out that the increase in the population surviving the winter and the expansion of the distribution range into areas not originally habitats of the sika deer are associated with the trend of mild winters caused by global

warming. In Lake Biwa, a serious drought occurred in the summer of 1994. It is known that the extremely reduced supply of water from rivers resulted in significant changes in the vertical distribution of organisms where the population of large phytoplankton decreased and small phytoplankton accumulated in a layer at which the temperature dramatically changes between the upper layer and the lower layer.

With regard to marine ecosystems, an increase in the seawater temperature is predicted to cause changes in the distribution ranges of organisms, coral bleaching and the disappearance of seagrass beds. In Sekisei Lagoon situated between Ishigaki Island and Iriomote Island, the frequency of the occurrence of serious coral bleaching phenomena has been increasing since 1998 and the coral coverage by reef forming corals has been decreasing (Figure 1-4-3). It has also been pointed out that a decrease in phytoplankton which is a main producer in the oceanic region could have impacts on marine ecosystems over wide areas. Further, it is predicted that acidification of the oceans will have negative impacts on organisms which form exoskeletons as well as the organisms which rely on these species, such as reef forming corals, shellfish and many planktic species. These changes are decreasing the quality of various ecosystem services and there is a concern that such changes would have major impacts on the social activities.

Figure 1-4-3 Relationship between coral bleaching and temperature in Sekisei lagoon



The year 1988 was also in the crisis range, however, there were almost no corals affected by the temperature due to feeding damage by the Crown of Thorns Starfish.

Note 1: Considering 30°C as the temperature for bleaching, the total of the values over 30°C is defined as the bleaching temperature index.

Source: Okamoto and others, 2007: Fishery oceanographic research on the temperature environment at the time of coral bleaching in Sekisei lagoon, 71 (2), 112-121.

When organisms can no longer tolerate these changes, they will become extinct unless they can "evolve in that place" or "migrate to a habitable place." Although sufficient scientific knowledge has not been accumulated for a prediction of the effects on the life and ecosystems in Japan if changes in the global environment advance, it is expected to be inevitable that there will be serious impacts on the biodiversity in Japan, particularly in areas that are vulnerable to environmental changes, such as islands, coasts, subalpine zones and alpine zones.

Changes in the global environment are predicted to have a large impact on human lives and socio-economy through changing biodiversity, including changes in the areas suitable for food production, an increase in the number of pests, etc., changes in the area and period of their occurrence and an expansion of the distribution

areas for vectors. As for food, the effects of temperature increases on rice have been pointed out. It is predicted that, when global warming progresses, the yield and quality of rice will decline in some areas if no measures are taken, although increases in yield are predicted in other areas. With respect to fisheries, it has been pointed out that fishing grounds and the fishing season could change as the habitats of target species move northwards. The northward migration of organisms that adversely affect fisheries is also indicated. For example in Hokkaido, it has been confirmed that more northern sea urchins (*Strongylocentrotus nudus*) are now caught in areas further north than before. The Longheaded Eagle Ray (*Aetobatus flagellum*), which was originally found in coastal areas in the subtropical to tropical zones, is now found in the Ariake Sea and the Seto Inland Sea in large numbers and is reported to be damaging fisheries. With respect to the effects on people's health, the immediate occurrence of large-scale infectious diseases epidemics due to global warming is not predicted, but the risk of infection is expected to increase due to the expansion of the distribution range for vectors caused by global warming.

Optional question: What are possible future changes for biodiversity and their impacts?

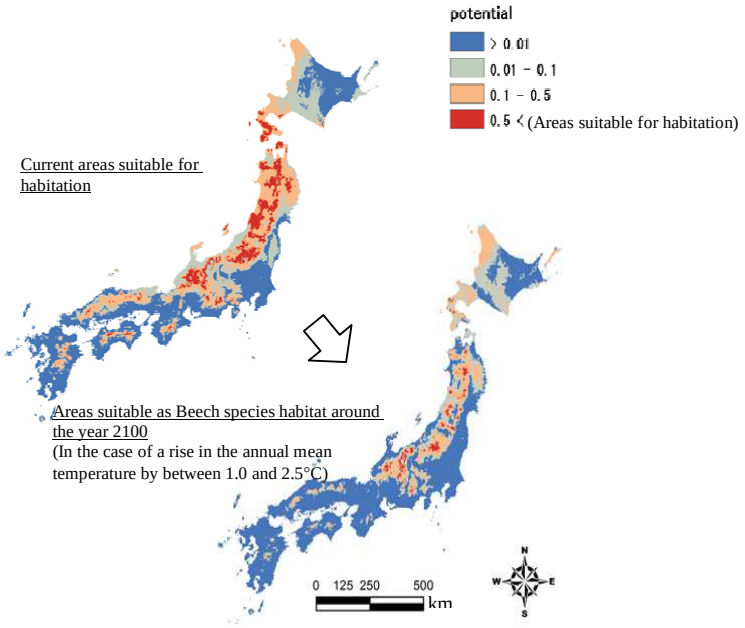
1.5 Future scenarios for biodiversity

(1) The impacts of the global warming

Biodiversity is particularly vulnerable to climate change. The Fourth Assessment Report (2007) of the Intergovernmental Panel on Climate Change (IPCC) predicts that, when the increase in the global average temperature exceeds 1.5 to 2.5°C, 20% to 30% of animals and plants that have been assessed will be at an increased risk of extinction. If the increase exceeds 4.0°C, it is predicted that there will be a grave global extinction of 40% or more of species.

There is a report that the climatic zones in Japan will move northwards at a rate of 4-5 km per year if there is a 3-4°C increase in the global average temperature by 2100. Through such changes, it is predicted that areas suitable for the distribution of beech forests, subalpine and subarctic coniferous forests will decrease and alpine plant communities will rapidly decline in some areas, for example (Figure 1-5-1). As for animals, it is predicted that the extinction risk for the Ptarmigan (*Lagopus mutus japonicus*) which inhabit high mountains will increase and that areas suitable as habitats for the char which live in cold water will decrease nationwide. Expansion of bamboo forests and pine mass-dieback in the Tohoku Region is also predicted.

Figure 1-5-1 Forecast for changes in areas suitable as a habitat for Japanese Beech tree species due to global warming



(2) The impacts of ocean acidification on coral reefs

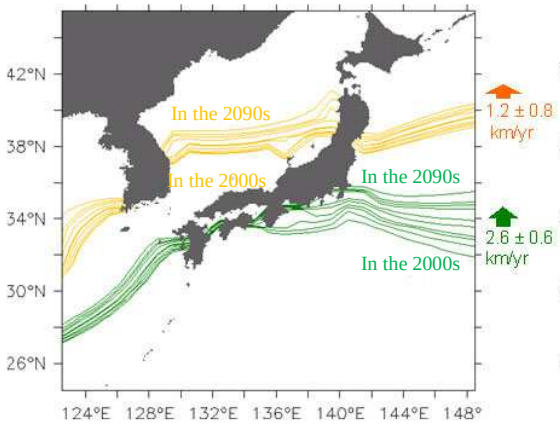
The National Biodiversity Strategy of Japan 2012-2020 mentioned for the first time the impact of ocean acidification in addition to the impact of global warming. It warns, "it is predicted that ocean acidification affects the survival of organisms which form calcium carbonate skeletons and shells such as reef forming corals."

In the Comprehensive Research for the Observation, Forecast and Evaluation of Asian Biodiversity, the impacts of climate change on coral reefs in Japanese waters were predicted using the latest climate system model which reconstructs and projects climate change (MIROC: the Model for Interdisciplinary Research on Climate) (Figure 1-5-2).

Figure 1-5-2 Projection for changes in coral distribution due to global warming and ocean acidification in the climate change scenario

A2 Future projection for coral distribution under the business as usual scenario

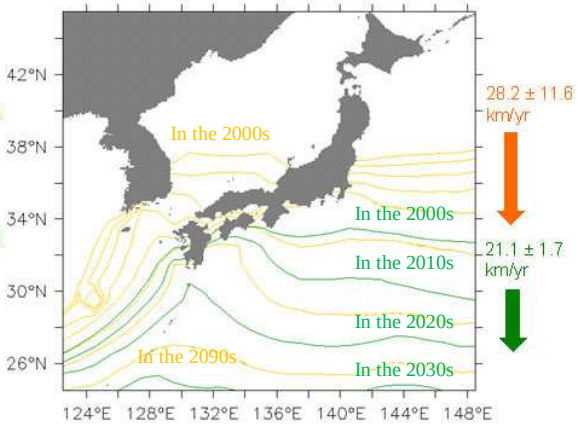
Index position of the northern limit of coral distribution will move northward due to global warming.



Orange line: limit of coral occurrence (monthly mean SST = 10C)

Green line: distributional limit of tropical coral communities (monthly mean SST = 18C)

Index position of the northern limit of coral distribution will move southward due to ocean acidification.



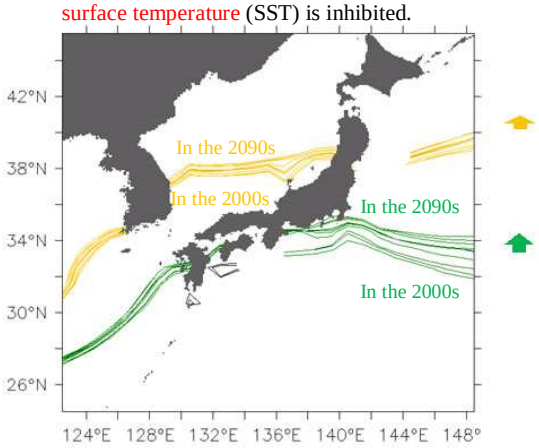
Orange line: limit of coral occurrence (aragonite saturation state = 2.3)

Green line: distributional limit of tropical coral communities (aragonite saturation state = 3.0)

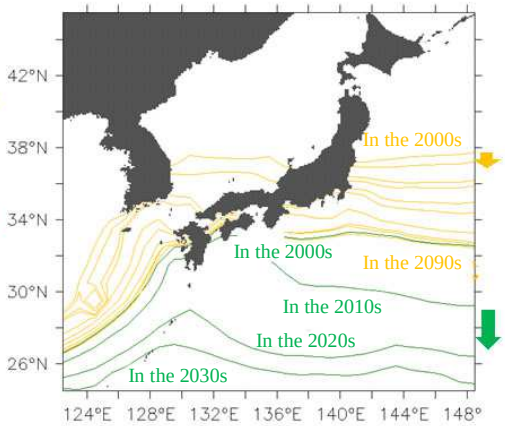
Ocean acidification limits poleward expansion of corals, and they could disappear around Japan because of lowered aragonite saturation state.

B1 Future projection for coral distribution under the mitigation scenario

Compared with the business as usual scenario, bleaching due to a rise in the sea surface temperature (SST) is inhibited.



Compared with the business as usual scenario, ocean acidification is significantly inhibited.



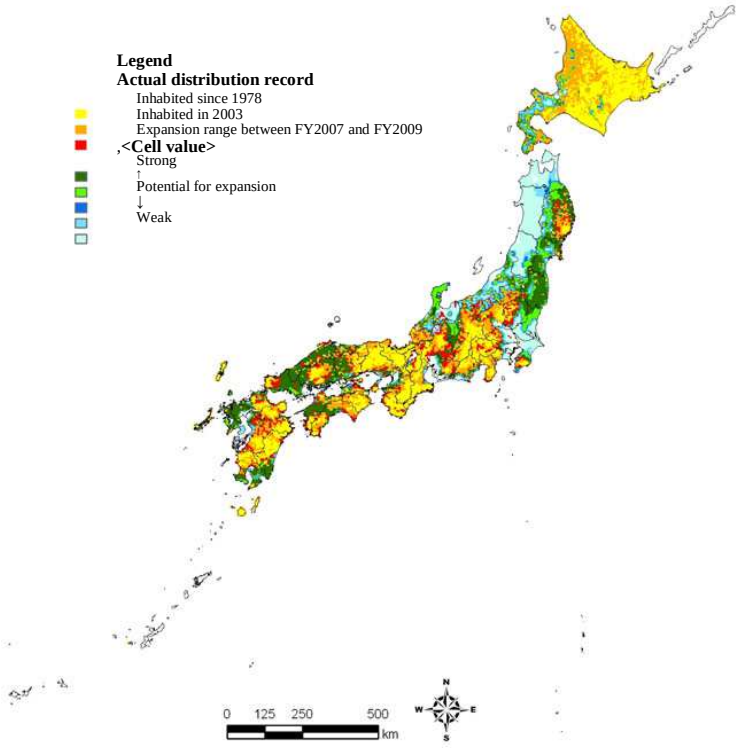
Coral could survive around the Ryukyu Islands where aragonite saturation state would be >2.3, because of mitigated effect of ocean acidification.

The projection of an increase in the surface temperature of the sea from 2000 to 2090 shows that, the area of coral distribution will move north by 1.2 to 2.6 km per year. On the other hand, it was also predicted that ocean acidification caused by increased levels of CO2 will cause the potential area of coral distribution to move south by 21.1 to 28.2 km per year. As a result, it was discovered that there is a risk that coral reefs will disappear from Japanese waters even if the temperature is suitable for their survival, because ocean acidification will prevent the formation of the calcium carbonate skeletons.
On the other hand, the mitigation scenario where CO2 emissions are reduced indicated that the sea surface temperature (SFT) rise and ocean acidification can be reduced and corals could still exist in the Japanese waters in 2090.

(3) The forecasted expansion in the distribution of sika deer (*Cervus nippon*)

In recent years, some medium and large mammals such as sika deer (*Cervus nippon*) have been expanding their populations and distributions across the country. This has led to increasingly serious damage to agriculture and forestry, as well as increasing impacts on natural ecosystems. A simplified forecast was made on the future expansion of the distribution of the sika deer, based on the distribution record data as well as the forest coverage and snow cover. The results show that the area of distribution has expanded greatly and is likely to expand further in various regions including Tohoku, Hokuriku, Chugoku Shikoku and Kyushu Regions. (Figure 1-5-3).

Figure 1-5-3 Distribution and expansion forecast for sika deer (*Cervus nippon*)



【http://www.biodic.go.jp/biodiversity/activity/policy/map/map14/index.html】

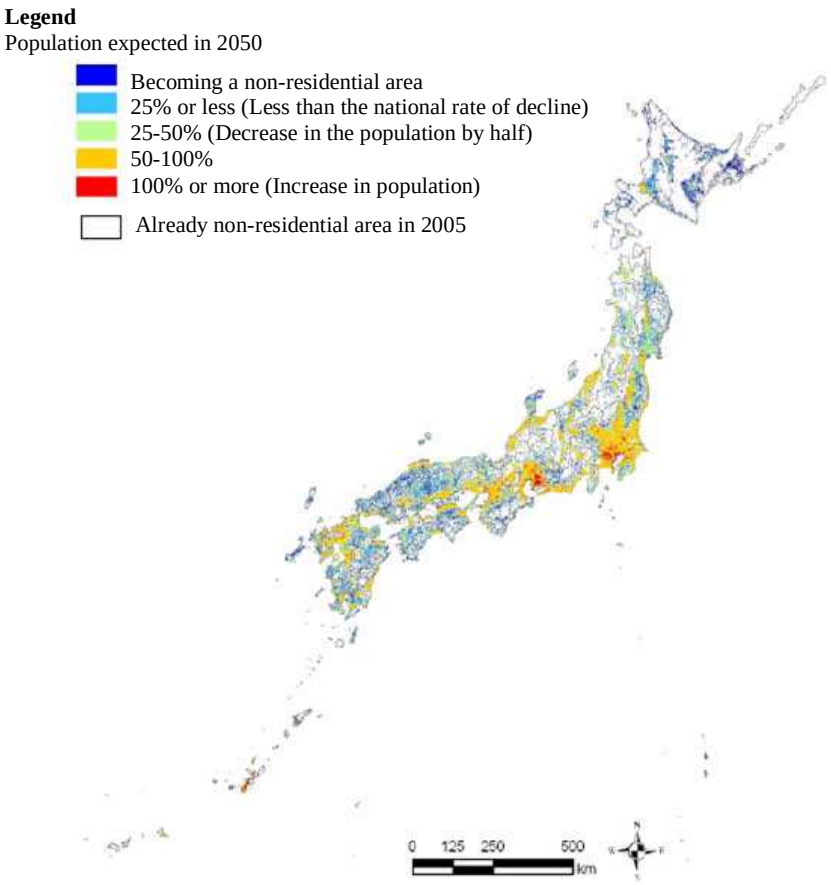
(4) Second crisis (caused by reduced human activities)

Satoyama environments have been maintained through the production activities of agriculture, forestry and fisheries as well as through utilization in daily life. However, due to the reduced use of forests and farmland caused by changes in the type of fuel used and the type of farming conducted as well as the population decline and aging, human activity in *Satoyama* areas is declining. This is causing the degradation or decline of habitats for organisms which rely on *Satoyama* environments. On the other hand, the populations of medium and large mammals including the sika deer (*Cervus nippon*), the Japanese macaque (*Macaca fuscata*) and the

wild boar (*Sus scrofa*) have increased considerably with their distribution expanding, which is causing serious damage to agriculture and forestry and is affecting ecosystems as well as causing injuries to humans every year. This is because population decreases in intermediate and mountainous areas and the reduced and aged workforce in agriculture and forestry are making it difficult to manage agricultural land and forests properly and this is creating living environments preferable for the medium and large mammals on abandoned farmland and neglected *Satoyama* forests.

The total population of Japan peaked in 2008 and is predicted to decrease into the future. Depopulation and the arrival of an aged society is forecast: the total population is expected to decrease to approximately 87 million and the percentage of the population aged 65 or older is expected to reach 39.9% by 2060. It is also predicted that the population will decline to less than half of the current level in more than 60% of current residential areas by 2050, of which about 20% will become non-residential areas. In particular, in areas remote from cities including intermediate and mountainous areas as well as areas around remote mountains, it is predicted that 30-50% of residential areas will become non-residential areas. Therefore, relationships between people and *Satoyama* landscapes may become even more disconnected in the future (Figure1-5-4).

Figure 1-5-4 Areas where it is expected that the number of management personnel will decrease due to the decline in the population



	Number of the mesh	%
Becoming a non-residential area	39,264	21.6
25% or less	37,012	20.4
25–50%	44,278	24.4
50–100%	57,713	31.8
Increase	3,352	1.8
Grand total	181,619	–

【http://www.biodic.go.jp/biodiversity/activity/policy/map/map12/index.html】

Chapter2 Implementation of the National Biodiversity Strategy and mainstreaming of biodiversity

Q5: What are the biodiversity targets set by your country?
Q6: How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

2.1 Background to the formulation of the National Biodiversity Strategy of Japan and its development

The National Biodiversity Strategy of Japan is formulated based on the Article 6 of the Convention on Biological Diversity (CBD) which came into effect in 1993. Japan became the 18th country to sign the convention in May, 1993. The convention came into effect in December of the same year. Since the Basic Act on Biodiversity came into force in 2008, it is also serving as a National Biodiversity Strategy formulated based on the law.

Japan formulated the First National Biodiversity Strategy of Japan in October 1995 as a national strategy aimed at the conservation and sustainable use of biodiversity based on the CBD. The National Biodiversity Strategy of Japan was formulated without delay after Japan signed the convention. It was the first plan which comprehensively compiled individual efforts that were made in line with the CBD through cooperation between the ministries and agencies concerned.
The Second National Biodiversity Strategy of Japan was formulated in March 2002 through a major revision of the first National Biodiversity Strategy of Japan. In the Second National Biodiversity Strategy, the current status of biodiversity in Japan was summarized as "three crises." It also provided rationales and specific priority policies and measures in an easy-to-understand manner. The strategy also strengthened the cooperation between ministries and agencies concerned when implementing policies and measures for the restoration of nature, the conservation of *Satoyama* landscapes, etc. These plans produced significant results such as successfully promoting the implementation of specific cooperation policies and measures.
The Second National Biodiversity Strategy of Japan was revised and the Third National Biodiversity Strategy of Japan was endorsed by the Cabinet in November 2007. The Third National Biodiversity Strategy of Japan had the following superior characteristics: it newly covered crises caused by global warming; it provided a vision of long-term targets for the ecological management of national land, in particular referring to its relationship to global biodiversity; and it provided an action plan which included as many targets and indicators for specific efforts as possible so as to provide a clear path towards the implementation of the strategy.

In 2008, it was decided that COP 10 would be held in Nagoya City, Aichi Prefecture in 2010 and the Basic Act on Biodiversity was established. The basic act stipulates the fundamental principles for the conservation and sustainable use of biodiversity as well as matters that serve as a basis of policies for the conservation and sustainable use of biodiversity. The law also requires that the government formulate the National Biodiversity Strategy. In line with the stipulations, the National Biodiversity Strategy of Japan 2010 was endorsed by the Cabinet in March 2010 as the first statutory national biodiversity strategy. The National Biodiversity Strategy of Japan 2010 made the establishment of a society in harmony with nature the long-term target and strengthened policies and measures with a view to implementing the efforts needed in preparation for COP 10 in light of progress in the implementation of current policies and measures and changes in circumstances, while maintaining the basic framework of the Third National Biodiversity Strategy of Japan such as the structure of the strategy and the period of the plan.

Finally, the National Biodiversity Strategy of Japan 2012-2020 was formulated by including the outcomes of COP 10 and the lessons learned from the Great East Japan Earthquake, as the Japanese road map for achieving the Aichi Targets and the specific strategy for establishing a society in harmony with nature.

Therefore, the National Biodiversity Strategy of Japan was revised twice after the 4th national report was submitted. This report explains the details of the National Biodiversity Strategy of Japan 2012-2020, which is the new document that contains strategies for the achievement of the Aichi Biodiversity Targets.

2.2 The National Biodiversity Strategy of Japan 2012-2020

(1) The background to the revision

The Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) was held in Nagoya City in Aichi in October 2010. The conference produced historic results including the adoption of the Strategic Plan for Biodiversity 2011-2020, which is the new global goal concerning biodiversity. The Strategic Plan for Biodiversity 2011-2020 stipulated based on a Japanese proposal that its overall vision of achieving a world of "Living in Harmony with Nature" shall be achieved by 2050. This vision is based on the idea which has been cultivated in Japan for many centuries that humans live as part of nature, rather than drawing a line between humans and nature. The international community will work towards this goal into the future.

The Strategic Plan for Biodiversity 2011-2020 also stipulates its mission of taking effective and urgent action to halt the loss of biodiversity by 2020. In addition, 20 headline targets were set as targets for specific actions for achieving the mission. These headline targets are called the Aichi Biodiversity Targets. Parties are invited to set their own targets where needed and integrate the targets into their national biodiversity strategies, in an effort to achieve the Aichi Biodiversity Targets.

The great force of nature brought by the earthquake and tsunami in the Great East Japan Earthquake which occurred in March 2011 caused devastating damage to the lives and livelihoods of people particularly on the Pacific coast in the Tohoku Region, as well as having a great impact on the environment which supports people's lives. This was an opportunity to deepen the recognition that nature which provides us with plentiful benefits also becomes a threat on occasion and that we have to live with these two opposing characteristics of nature. The experience of the Great East Japan Earthquake also exposed the vulnerability of Japanese socio-economic systems where the production and distribution of energy and goods are extremely centralized.

The National Biodiversity Strategy of Japan 2012-2020, which was decided upon by the Cabinet on September 28, 2012, has the role of providing the Japanese road map for achieving the Aichi Biodiversity Targets. It also aims to re-evaluate the current relationships between humans and nature and to show what a society in harmony with nature should look like, in light of the experience in the Great East Japan Earthquake and the current Japanese social situation where depopulation is progressing.

(2) The response to the Aichi Biodiversity Targets

While the previous National Biodiversity Strategies of Japan were made up of two parts, namely the "Strategy" and the "Action Plan," the National Biodiversity Strategy of Japan 2012-2020 has three parts since the "Roadmap for the Achievement of the Aichi Biodiversity
Targets" was added between the "Strategy" and the "Action Plan" (Figure 2-2-1). This newly added Part 2 stipulates our national targets, etc. which correspond to the Aichi Biodiversity Targets.

The Strategic Plan for Biodiversity 2011-2020 is comprised of five strategic targets that set out a total of 20 headline targets (the Aichi Biodiversity Targets) including specific numerical targets with either 2015 or 2020 as their target years. These strategic targets consist of: A. Mainstreaming biodiversity across society; B. Reduce the direct pressures on biodiversity and promote sustainable use; C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; D. Enhance the benefits to all from biodiversity and ecosystem services; and E. Enhance implementation through participatory planning, knowledge management, and capacity development. In line with these five strategic targets, 13 targets and 48 key action goals were set as our national targets, by taking into account our country's situation, needs, priorities, etc. Indicators were also set in order to track the achievement levels for the national targets (Table 2-2-1).

For example, National Target B-1 is to "significantly reduce the rate of loss of natural habitats, as well as their degradation and fragmentation, by 2020." One key action goal set for the achievement of the national target is to implement measures needed to prevent damage by wildlife such as the sika deer (*Cervus nippon*), which has been expanding its distribution across the country in recent years. The measures include the revision of the Wildlife Protection and Hunting Management Law. In January 2013, the government decided to add "Amami-Ryukyu" to its Tentative List, which is a prerequisite for nomination for the World Heritage List. In order to have the area selected to be a World Natural Heritage Site, the Japanese government has to ensure that the area is properly managed. For this purpose, the government has to designate new National Parks or expand existing National Parks in the area. Such efforts will contribute to the achievement of National Target C-1, "Appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas, by 2020." The government published the 4th Red List in FY2012.

National Target C-2 is to “increase the number of species that will see their rank fall compared to the 2012 Red List by 2020.” Japan will therefore continue its efforts to collect the knowledge needed to conserve threatened species. Some of the national targets require the development of methods, etc. for understanding achievement levels. For example, National Target C-1 is to “Appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas, by 2020.” The achievement levels for the target will change depending on how one defines what “appropriately conserve and manage” means for protected areas such as National Parks and Nature Conservation Areas. Another example is National Target D-2, which aims at the “restoration of at least 15% or greater for degraded ecosystems by 2020.” The achievement levels for the target will also change depending on the year used as the base year to define “degraded ecosystems” as well as how to define “restoration.” For these targets, methods and baselines for understanding achievement levels were decided upon (see Chapter 3).

(3) The “socio-ecological sphere for living in harmony with nature” connected through ecosystem services

The National Biodiversity Strategy of Japan 2012-2020 introduced a new concept, the “socio-ecological sphere for living in harmony with nature” (Figure 2-2-2). The Great East Japan Earthquake exposed the vulnerability of socio-economic systems where the production and distribution of energy and goods are extremely centralized. Therefore, it is necessary to aim for the establishment of independent and distributed local communities where local resources including food and energy are produced for local consumption and local resources are recycled and utilized sustainably within local areas. While prioritizing the establishment of independent and distributed local communities, it is also necessary to deepen the connection between local communities, thereby creating a safer and more secure society.

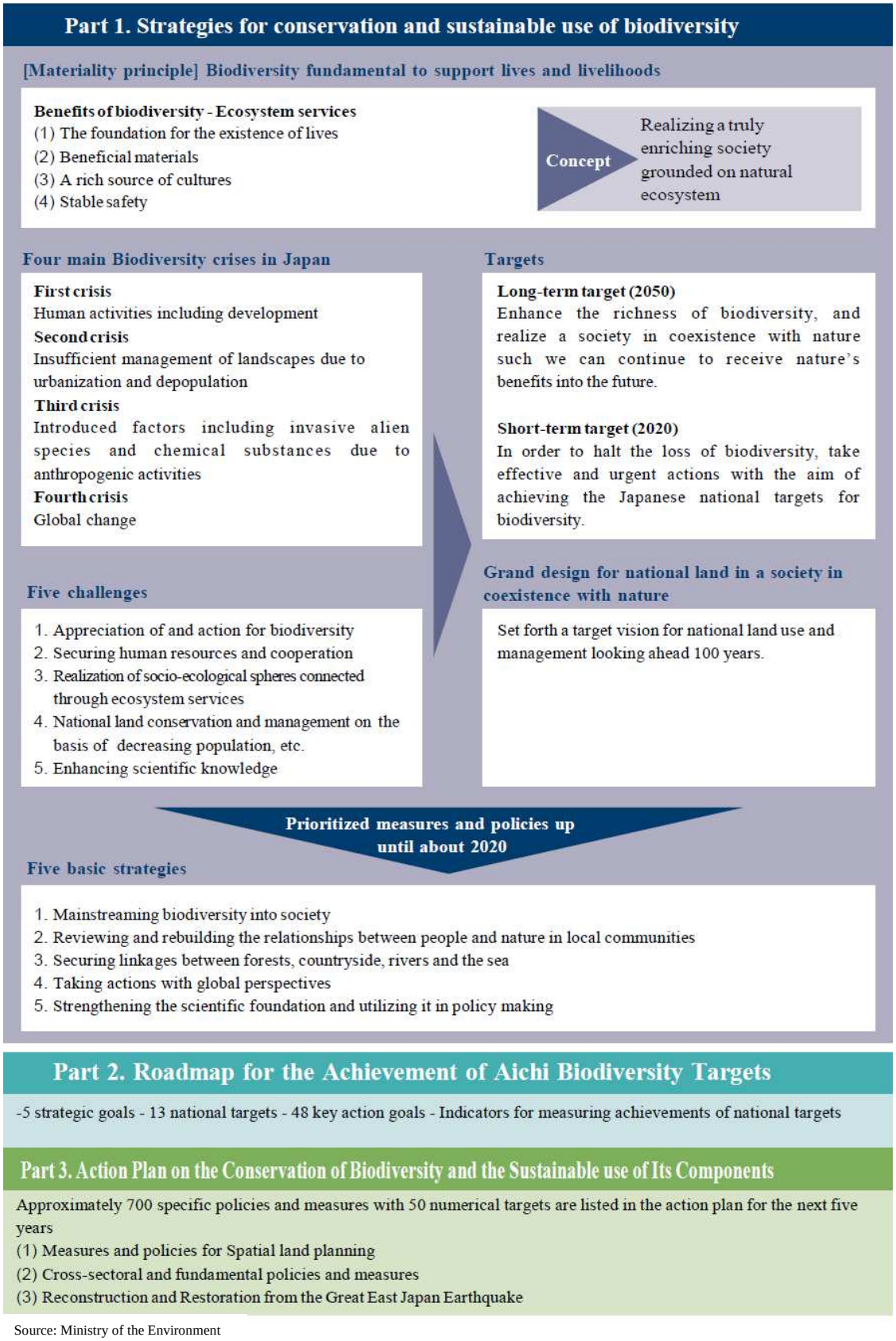
Although ecosystem services, which are benefits of nature, are mainly provided by rural areas which are rich in nature, larger areas including cities benefit from ecosystem services. However, since these connections are generally difficult to recognize, urban areas have benefited from ecosystem services provided by rural areas without being burdened with major costs. Therefore, there is a need to revise such relationships and create mutual support systems through which the funds, human resources and information are supplied by communities which receive ecosystem services to rural communities, in order to conserve and manage ecosystems. The “socio-ecological sphere” is the idea that areas (and people within) which have supply-demand relationships for ecosystem services are considered to be one sphere, and that communities within the sphere will deepen cooperation and interaction as well as support each other. Since Japanese people also rely on ecosystem services from overseas, it is important to expand the sphere for living in harmony with nature by taking into account the connection between our lives and areas overseas which provide ecosystem services.

(4) National land grand design for society in coexistence with nature

Japan has set out the short-term goals based on the Strategic Plans 2011-2020, and the long-term goals towards 2050 in the National Biodiversity Strategy of Japan 2012-2020. On top of that, an ideal land use paradigm was presented in it as “The National Land Grand Design” with a long-term perspective aiming to recover the ecosystems which were destroyed over the past 100 years, for the next 100 years in middle of a rapid population decrease. In order to shape this concept to realisation, Japan has outlined the broad direction of national measures to be conducted by 2020 in the basic strategies, and set out specific measures in line with them in the Action Plans. Please refer to the National Biodiversity Strategy of Japan 2012-2020 for more information about the grand design.

Figure 2-2-1 Overview of the National Biodiversity Strategy of Japan 2012-2020

Approved by the Cabinet on September 28, 2012

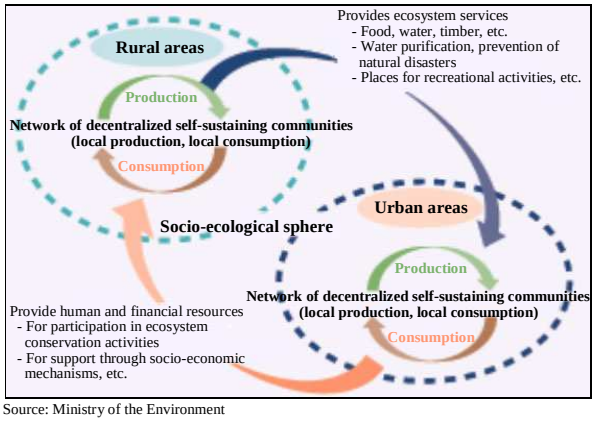


Source: Ministry of the Environment

Table 2-2-1 Japan's national targets for the achievement of the Aichi Biodiversity Targets

Strategic goaols	National targets	Aichi Targets
Strategic goal A Address the underlying causes for the loss of biodiversity	A-1 Have a diverse array of actors recognize the importance of biodiversity and reflect this in their respective actions, thereby achieving the "mainstreaming of biodiversity across society" and reducing the fundamental causes of biodiversity loss, by 2020 at the latest.	1 2 3 4
Strategic goal B Advance initiatives geared towards minimizing human-induced pressures that degrade ecosystems and promote their sustainable use	B-1 Significantly reduce the rate of loss of natural habitats, as well as their degradation and fragmentation, by 2020.	5
	B-2 Engage in agriculture, forestry, and fisheries that ensure the conservation of biodiversity in a sustainable manner by 2020.	6 7
	B-3 Maintain the water quality and habitat environments desirable for the conservation of aquaticorganisms, increasing biological productivity, and sustainable use while continuing to improve the state of contamination from nitrogen and phosphorous by 2020. When it comes to water areas with a highly closed off nature in particular, promote policies in a comprehensive and prioritized manner.	8
	B-4 By 2020, based upon the results of examinations of the enforcement status for the Invasive Alien Species Act, apportion out appropriate roles to each of the major actors regarding eradication of the invasive alien species and proceed with eradicating them in a systematic manner. In addition, promote countermeasures by examining more effective border control measures.	9
	B-5 Promote initiatives for minimizing human-induced pressures that cause deterioration of ecosystems that are vulnerable to climate change, such as coral reefs, seagrass beds, tidal flats, islands, alpine and subalpine areas by 2015.	10
Strategic goal C Improve the status of biodiversity by conserving ecosystems, species, and genetic diversity	C-1 Appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas, by 2020.	11
	C-2 For species in the greatest danger of going extinct, increase the number of species that will see their rank in the Red List fall by 2020. In addition, maintain the genetic diversity of crops, livestock animals, etc. by 2020.	12 13
Strategic goal D Enhance benefits from biodiversity and ecosystem services	D-1 Enhance benefits received from biodiversity and ecosystem services in Japan and elsewhere through the conservation and restoration of the ecosystems by 2020. With the increased recognition of the importance of the sustainable use of natural resources in "Satochi-satoyama" areas, a range of approaches are to be carried out.	14
	D-2 Enhance the resilience of ecosystems and their storage of carbon dioxide by restoring at least 15% of degraded ecosystems, and thereby contribute to climate change mitigation and adaptation by 2020.	15
	D-3 Aim to ratify the Nagoya Protocol on ABS as early as possible and implement the domestic measures for the Protocol by 2015 at the latest.	16
Strategic goal E Steadily promote policies based upon the NBSAP, strengthen scientific grounds as a foundation for such promotions, and promote capacity building in the biodiversity field	E-1 Promote policies related to the conservation of biodiversity and the sustainable use of its component based on the National Biodiversity Strategy of Japan in a comprehensive and systematic manner. Also, provide support to ensure the achievement for Target 17 (e.g. setting out effective and participatory national biodiversity strategies etc.).	17
	E-2 Sanctify traditional knowledge on biodiversity in local communities by 2020. Also, strengthen scientific grounds as well as the connections between science and policy, and mobilize the resources (funds, human resources, technologies, etc.) effectively and efficiently to achieve the Aichi Biodiversity Targets by 2020 at the latest.	18 19 20

Figure 2-2-2 The Socio-Ecological Sphere

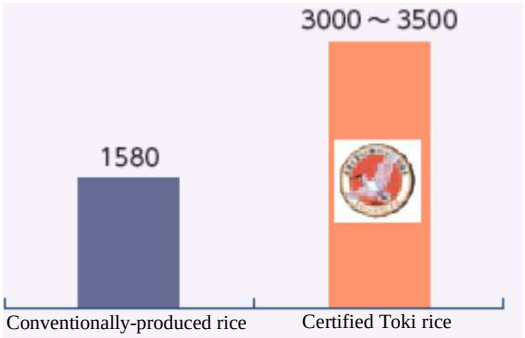


Source: Ministry of the Environment

[Case study: Rice on Sado Island that is certified as being grown in harmony with animals]

Community development for the purpose of living in harmony with the Japanese crested ibis (*Nipponia Nippon*, referred to as the Toki in Japanese) on Sado Island in Niigata can be considered as an effort in accordance with the idea of a society in harmony with nature. Regarding the situation of the Japanese crested ibis, the last five birds in the wild were captured on Sado Island, Niigata, in 1981 and the species then became extinct in the wild in Japan. Some individuals of the same species were then introduced from China and these were successfully bred in captivity, leading to a steadily increasing population. With the aim of returning the birds to the wild, bird releases started in 2008. The birth of chicks in the natural environment was detected in 2012 for the first time in 36 years, and young birds were observed to have fledged in the wild in the same year, for the first time in 38 years. Thus steady efforts are being made towards returning the Japanese crested ibis to the wild. Along with these bird releases, community involvement for the purpose of living in harmony with this species, such as the development of its habitat (creation of feeding sites, etc.) and the promotion of exchanges with people outside the island, has progressed on Sado Island. With the bird releases in 2008, Sado City started a system that certifies rice grown by a farming method that nurtures animals and their habitats as "Certified rice for the development of villages coexisting with the Japanese crested ibis", in cooperation with Japan Agricultural Cooperatives. "Certified rice for development of villages coexisting with the Japanese crested ibis" is sold at a price of about 3,000 yen - 3,500 yen/5 kg (ref. 1,580 yen/5 kg for conventional cultivated rice) in supermarkets and rice stores in the Tokyo metropolitan area (Figure 2-2-3). The higher the retail price, the greater the profits returned to farmers who contribute to the improvement of habitats using farming methods that nurture wild fauna. This means that these consumers also support the re-establishment of a wild population of the Japanese crested ibis through their purchase of the "Certified rice for the development of villages coexisting with the Japanese crested ibis". At the time of purchase, 1 yen per 1 kg is also donated to the Japanese crested ibis Environmental Improvement Foundation, which supports the improvement of the habitat for this bird. Moreover, Sado City provides a subsidy up to 109,000 yen per hectare to farmers working on the certified rice, through which it can be considered that the whole community supports the certification system. In this way, returning the Japanese crested ibis to the wild is supported not only by people actually working on habitat environment improvement, but also by consumers who want to support such people and the whole Sado Island community aims to revitalize the area using the Japanese crested ibis as a symbol. It can be considered that the connections that have been developed between the farmers, consumers, and community residents are exactly in accordance with the idea of a society in harmony with nature.

Figure 2-2-3 Retail price for conventionally-produced and certified rice (yen/5 kg)



Source: Payment for ecosystem services (PES)

http://www.biodic.go.jp/biodiversity/shiraberu/policy/pes/en/index.html

(5) The fifth basic strategy: "strengthening the scientific foundation and utilizing it in policy making"

The Third National Biodiversity Strategy of Japan which was formulated in 2007 and the following revision stipulated four basic strategies as general directions for priorities issues which should be focused on in the following few years. In the National Biodiversity Strategy of Japan 2012-2020, the fifth basic strategy,

"strengthening the scientific foundation and utilizing it in policy making" was added. In order to appropriately conduct the conservation of biodiversity and the sustainable use of its components, and to build a truly rich society based on the mechanisms of nature, it is necessary to correctly understand nature based on scientific data. On top of that, it is important not to defer implementing biodiversity conservation measures for the reason of the incompleteness of the scientific evidence, and instead to take action in a timely manner and flexibly revise measures based on the results of continuous monitoring.

In order to understand long-term, time-series changes from data concerning biodiversity nationwide, it is important to conduct continuous studies. In Japan, continuous studies have been conducted including the National Surveys on the Natural Environment which started in 1973. Although there is a problem regarding the promptness of the reporting, the data collected through the surveys are being used to formulate policies, etc. in various ways. For example, Japan has been developing a nationwide 1:25,000 vegetation map since 1999. The vegetation map is covering about 64% of the total national land as of March 2013 and it is used as basic information on the natural environment of Japan, when formulating environmental conservation measures and conducting assessments. These efforts to understand the natural environment across the country and continuously update the information are extremely important. In addition to understanding the natural environment over a large area, it is also important to continuously track changes in ecosystems at fixed points over a long period of time. Therefore, Japan launched the Project for Promoting the Monitoring of the Sites of Important Ecosystems (Monitoring Sites 1000) in 2003. As of July 2013, surveys are being conducted at 1,020 sites with various ecosystems nationwide. Monitoring Sites 1000 is characterized by the fact that citizens who are active in local communities cooperate with the project in addition to surveys by researchers, in order to implement the surveys more efficiently and effectively. The project has prepared manuals and is holding training sessions and seminars in order to support citizen activities. The results of these surveys are being used as basic data for designating protected areas, preparing the Red List, etc. 10 years have passed since the project started. The project started to compile survey results over a five-year period for each type of ecosystem, in order to have more effective utilization of survey results for assessing the achievement levels for the Aichi Biodiversity Targets and for the implementation of other conservation measures. The compilations of results will be published at the beginning of FY2014, but the compilations for seashores, tidal flats, eel grass beds and seagrass beds were published in October 2013. Japan will prepare information needed for biodiversity conservation by utilizing these results while also striving to improve the promptness of publishing reports. Various parties including the government, local governments, research institutes, museums, NPOs, NGOs, experts and citizens have a variety of data on biodiversity from the national level to the local level, which was obtained through their own surveys and research. However, some of the data is only used within each group or is left unused. There is a need to share the information between various parties in easy-to-use form and utilize the information for government measures and each party's activities. Therefore, the government launched a new system called Ikimono Log (meaning the log of living organisms) where data is collected from various parties and shared via the Internet, etc. Japan will further develop data on biodiversity by focusing on continuous updating, faster reporting, mutual utilization and the sharing of data.

Internationally, an international framework for scientifically evaluating trends in biodiversity and ecosystem services as well as the strengthening of the connection between science and policy had been needed. In April 2012, the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) was established. Japan will actively participate and contribute to the IPBES so that it will become an effective and efficient framework based on science. Japan will also develop national systems which correspond to the IPBES activities.

Question 7 What actions has your country taken to implement the Convention since the fourth report and what have been the these actions?

2.3 Development of measures after the publication of the 4th national report

(1) Overview of the legal system for the conservation of biodiversity and the sustainable use of its components

The Japanese legal system for the conservation of biodiversity and the sustainable use of its components covers a wide range of fields. It is important that laws constituting the legal system operate effectively in a coordinated manner under the Basic Act on Biodiversity which was put into force in 2008 and the national

biodiversity strategy has the role of setting forth the basic policy for the effective operation of the legal system.
For example, in response to the formulation of the 2nd National Biodiversity Strategy of Japan in 2002, the Law for the Promotion of Nature Restoration was established with the aim of restoring nature which has been lost in the past. In addition, as a measure to control the third crisis, the Invasive Alien Species Act was established in 2004 in order to prevent damage to ecosystems, etc. by alien species. Therefore, the legal system for biodiversity has been fleshed out in line with the general direction set forth by the national biodiversity strategy.

The legal system for biodiversity contains various types of systems including: ones that contribute to the conservation of the natural environment through area designation and conduct restriction; ones that contribute to the appropriate conservation and management of national land; ones that regulate the handling of individual wild organisms; ones stipulating procedures which contribute to avoidance and reduction of environmental impacts; ones that regulate human activities with no specification of the area; and ones facilitating actions which contribute to the conservation of biodiversity and the sustainable use of its components.

In 2010, the Act on the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors was formulated, in order to encourage various parties including municipal governments, NPOs, local residents and businesses to cooperate with each other in conducting biodiversity conservation activities, with the aim of conserving local biodiversity.

In light of the adoption of the Aichi Biodiversity Targets and the situation where the vicious and illegal trade in rare wild animal and plant species continues, the Law for the Conservation of Endangered Species of Wild Fauna and Flora (Act on Conservation of Endangered Species of Wild Fauna and Flora) was revised in 2013, in order to strengthen measures for the conservation of endangered species of wild fauna and flora. Through the revision, the maximum prison sentence and the maximum financial penalties were raised for the illegal transfer, etc. of rare wild animal and plants species.

In the same year, in light of the adoption of the Aichi Biodiversity Targets and the concern that hybridization between invasive alien species and other species may affect ecosystems, the Invasive Alien Species Act was revised. Through the revision, hybrids of Invasive Alien Species became subject to the law and also new regulations such as inspection of imported products and sterilization and disposal control were added to the law.

In order to promote the conservation of biodiversity and the sustainable use of its components and to achieve a society in harmony with nature based on Article 2 of the Supplementary Provisions in the Basic Act on Biodiversity, it is necessary to continue examining progress in the enforcement of laws concerning the conservation of biodiversity and necessary measures should be taken based on the examination results.

(2) Overview of area designation systems for the conservation of biodiversity
Article 14 of the Basic Act on Biodiversity requires that areas that are found to be important in terms of conservation of biodiversity shall be conserved. The conservation of biodiversity should be conducted centering the conservation within respective wildlife habitats. In Japan, efforts are being made to conserve biodiversity through the following measures based on various laws related to the conservation of the natural environment: making various area designations and appropriately managing the designated areas by considering the conservation of biodiversity as well as securing the continuity of wildlife habitats by considering networks of ecosystems. The types of areas designated under the area designation systems include: Nature Conservation Areas based on the Nature Conservation Law; natural parks based on the Natural Parks Law, Wildlife Protection Areas based on the Wildlife Protection and Hunting Management Law; and Natural Habitat Conservation Areas based on the Species Conservation Act. Designated areas for forests include: conservation forests based on the Forest Law; and Protected Forests and Green Corridors based on the Law on the Administration and Management of National Forests. For urban areas, special green conservation areas are designated based on the Urban Green Space Conservation Act.

There are also areas protected internationally, including Ramsar Sites registered under the Convention on

Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) and world heritage sites registered under the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention). Protection of these areas contributes to the conservation of internationally important natural environments. In 2011, the global significance of the Ogasawara Islands was recognized and the site was inscribed on the World Heritage List. Its global significance was recognized because it is a cross section of species, as various organisms which evolved into unique species including plant species and land snails are found in areas of the oceanic islands. At COP 10, the target that "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas are conserved through systems of protected areas and other effective area-based conservation measures" was adopted as one of the headline targets in the Aichi Biodiversity Targets.

Japanese area designation systems include those directly aiming at nature conservation and those that contribute to nature conservation through conduct restrictions. Designated areas which come under the former category include Nature Conservation Areas, natural parks, Wildlife Protection Areas, Natural Habitat Conservation Areas, and Protected Forests in National Forest. Among the areas designated by directly aiming at nature conservation, natural parks play a particularly important role in the conservation of biodiversity. The total area of natural parks was 5.43 million hectares as of September 2012, including National Parks, Quasi-National Parks and Prefectural Nature Parks, accounting for about 14.4% of the Japan's total land area. In natural parks, there are special zones that require permission for development. These special zones cover an area of 1.51 million hectares in National Parks, 1.27 million hectares in Quasi-National Parks and 0.72 million hectares in Prefectural Nature Parks, accounting for about 9.3% of Japan's total land area. Wildlife Protection Areas, in which the capture of wildlife is regulated, consist of National Wildlife Protection Areas and Prefectural Wildlife Protection Areas. As of December 2013, the total area of Wildlife Protection Areas was 3.62million hectares. The total area of special protection zones that require permission for development as well as permission for the capture of wildlife was 0.3 million hectares. With respect to Nature Conservation Areas, the total area of Wilderness Areas, Nature Conservation Areas and Prefectural Wildlife Protection Areas was 100,000 hectares as of September 2012 (Figure 2-3-1). There were also nine Natural Habitat Conservation Areas totaling 885 hectares as of December 2013. National forest serves a central role in ecological networks as they account for 20% of the national land area and are widely distributed in areas important for national land protection such as up-country mountain backbones and catchment areas. National Forest which has particularly primeval forest ecosystems and National Forest inhabited by rare wild animals and plants are specified as Protected Forests such as Forest Ecosystem Reserves which are left to succession without human intervention in principle. There are 849 Protected Forests as of April 2013 totaling 970,000 hectares, which accounts for a little over 10% of the total area of National Forest. Green Corridors also are established in order to secure migration routes between the habitats of wild animals and plants based primarily around Protected Forests. The total area of Green Corridors was 580,000 hectares as of April 2013.

In urban areas, 2,412 hectares of land had been designated as special green conservation areas as of March 2012 under the Urban Green Space Conservation Act. 97,330 hectares were designated as Suburban Green Conservation Areas based on the Law for the Conservation of Green Belts around the National Capital Region and the Law for the Development of Conservation Areas in the Kinki Region, of which 3,718 hectares were designated as Suburban Special Green Conservation Areas. In addition, 119,016 hectares of urban parks, etc. have been developed as of March 2012 based on the Urban Park Act. Thus the conservation, restoration and creation of green spaces which provide precious habitats for organisms are progressing in urban areas.

In 2001, a questionnaire survey and other surveys were conducted for researchers and prefectural governments nationwide in order to identify and summarize information on ecosystems which are worth noting in terms of biological characteristics such as natural vegetation and faunas. As a result, 396 areas were identified as areas which have a wide distribution of important vegetation, such as Yezo spruce (*Picea jezoensis*) and Sakhalin fir (*Abies sachalinensis*) forests in the eastern part of Hokkaido, beech (*Fagus crenata Blume*) forests in the northern part of Honshu and *Castanopsis sieboldii* forests on the Pacific seaboard in the central part of Honshu. A little over 40% of these important areas are protected under the area designation systems which directly aim at nature conservation (i.e. being designated as Wilderness Areas, Nature Conservation Areas, National Parks, Quasi-National Parks, Prefectural Nature Parks, National or Prefectural Wildlife Protection Areas, forest reserves such as forest ecosystem reserves, etc.).

With respect to coastal and marine areas, 40-50% of the total area of seagrass beds and coral reefs are protected under the area designation systems, but most of them are in loosely controlled "ordinary zones" of National or Quasi-National Parks. Only about 10% of the total area of tidal flats is protected under the area designation systems. Since neritic areas such as tidal flats, seagrass beds and coral reefs are important areas for the conservation of biodiversity, further promotion of the conservation of these areas is needed. In the Marine Biodiversity Conservation Strategy formulated in March 2011, marine protected areas were defined as "marine areas designated and managed by law or other effective means, in consideration of use modalities, aimed at the conservation of marine biodiversity supporting the sound structure and function of marine ecosystems and ensuring the sustainable use of marine ecosystem services." The definition was acknowledged by the Headquarters for Ocean Policy in May 2011. According to the estimation made for the meeting of the Headquarters for Ocean Policy, marine protected areas as defined above accounted for about 8.3% of the closed sea and the exclusive economic zone (EEZ) of Japan. These marine protected areas are designated under various systems including ones that regulate development in order to conserve habitats and ones that mainly aim at the sustainable use of resources. Therefore, it is necessary to conduct appropriate conservation and management by effectively combining these systems. In addition, it is important to consider standards and methods for evaluating the effects of marine protected areas from the biodiversity standpoint and therefore the promotion of research for this purpose is also necessary.

Based on the purposes of the CBD and the Basic Act on Biodiversity, the Japanese government has been promoting the designation of conservation areas under various area designation systems, as well as improving the systems and conducting activities in national forest which set an example for conservation efforts. It revised the National Park Act and the Nature Conservation Law in 2009, and strengthened conservation measures for National Parks, etc. including the expansion of marine protection systems and the improvement of ecosystem management. In response to changes in the natural environment, social circumstances and the diversification of appreciation of landscapes, the government conducted a comprehensive check of the quality of National and Quasi-National Parks and it published its results in the Report on the Comprehensive Check of National and Quasi-National Parks in October 2010. As a result of the comprehensive check, 18 areas were selected as candidates for new designation as National or Quasi-National Parks or the major expansion of existing parks, including the Amami Islands in Kagoshima and the Yanbaru area in Okinawa. In March 2014, the Kerama area, which is one of the candidates, will be designated as the Kerama-shoto National Park because it has marine areas of outstanding beauty with very clear water and the area has diverse ecosystems from the coasts to the sea. For example, diverse coral species are forming dense coral reefs and the area is a breeding ground for humpback whales (*Megaptera novaeangliae*). In addition, with regard to national forestry, the area of Forest Reserves and Green Corridors is increasing overall. Forest Reserves are forests that are strictly protected and managed. They include primeval forest ecosystems and forests where rare wild organisms live. Green Corridors are forests that provide migration paths for wild animals and plants. For these areas, Japan is conserving and managing the vegetation as well as revising the protected zones, using knowledge obtained through monitoring surveys, etc. In October 2011, the Technological Considerations in Securing Biodiversity under Master Planfor Greenery was formulated in order to secure biodiversity through the creation of ecological networks by connecting vegetated areas in the city.

(3) Efforts for the Conservation and Management of Wildlife

Efforts are being made for the conservation and management of wildlife, including the conservation of threatened wildlife species, the protection and management of birds and mammals, and measures to control alien species.

The Law for the Conservation of Endangered Species of Wild Fauna and Flora aims to conserve threatened wild animal and plant species through controlling the capture and transfer of rare species, designating Natural Habitat Conservation Areas and implementing the Conservation Programmes defined by the law. Rare designated wild animal and plant species in Japan whose capture and transfer are controlled under the Law for the Conservation of Endangered Species of Wild Fauna and Flora were only 89 species as of June 2013, including five mammal species, 37 bird species, one reptile species, one amphibian species, four brackish/freshwater fish species, 15 insect species and 26 plant species. Some local governments are taking independent conservation measures for threatened species based on local government ordinances, etc. 31

prefectures have established rare species protection ordinances and designated 457 rare wild animal and plant species in total as of October 2011.

Plans for the Conservation Programmes defined by the law have been formulated and the programs are being implemented for the development of habitats and the breeding of populations for 49 species of rare wild animals and plants found in Japan, under the Law for the Conservation of Endangered Species of Wild Fauna and Flora. Regarding the Japanese crested ibis (*Nipponia nippon*), the last five birds were captured on Sado Island, Niigata in 1981 and the species became extinct in the wild in Japan. Birds were then provided from China, which were successfully bred in captivity, leading to a steadily increasing population. After habitats were developed and community involvement progressed with the aim of returning the birds to the wild, bird releases started in 2008. Birds have been released into the wild nine times so far. The birth of ibis chicks was detected in April 2012, for the first time after the release of birds, and young birds were observed to have fledged in the wild in May of the same year, for the first time in Japan for 38 years. Thus steady efforts are being made towards returning the ibis to the wild. The short-tailed albatross (*Diomedea albatrus*) were overexploited on a large scale for their feathers and were thought to have become extinct, but about 10 of them were found to have survived on Tori Island in the Izu Islands in 1951. Thanks to vigorous protection activities by experts and others since then, it has been estimated that the population has recovered to about 3,000. Since 2008, the Yamashina Institute for Ornithology and others have been conducting a project to send chicks to Muko Island in the Ogasawara Islands where they are artificially fed and fledged, in order to create a new breeding ground. In 2011, young birds which fledged out the nest on Muko Island were observed to have returned to the island for the first time. Thus artificial population recovery efforts for the species are progressing.

The Law for the Conservation of Endangered Species of Wild Fauna and Flora designates endangered wild animal and plant species which shall be conserved through international cooperation as “international endangered species of wild fauna and flora” and controls their trade within the country.

Regarding the mammals and birds that are causing serious damage to ecosystems and agricultural, forestry and fishery industries, the Basic Guideline for Implementation of Wildlife Conservation Project formulated based on the Wildlife Protection and Hunting Management Law was revised in September 2011, from the following standpoints: emphasizing the conservation of biodiversity; promoting the protection and management of specified wildlife; vigorously promoting measures to control infectious diseases such as avian influenza; etc. In the revision, measures for wildlife protection and management were strengthened by securing personnel and promoting community activities. For example, those who do not have a hunting license were allowed to participate in the capture of wildlife using traps, nets, etc. under the supervision of licensees in all local government jurisdictions in Japan, because this measure had proven to be an effective measure in special deregulation zones.

As the habitats of wildlife such as sika deer (*Cervus Nippon*) and the wild boar (*Sus scrofa*) expand and their populations increase, the damage to ecosystems as well as agriculture, forestry and fisheries is becoming serious. On the other hand, the number of hunters who have been playing central roles in the capture of wildlife is rapidly decreasing or they are aging, and a lack of wildlife control personnel is becoming a major problem. Due to the need to train personnel and to develop a wildlife protection and management system which can function into the future, in 2013, the Central Environment Council started to discuss the construction of an effective organizational structure for capturing wildlife, etc. under the title of “Measures Which Need to Be Taken for the Wildlife Protection and Hunting Management.”

Invasive alien species have been designated under the Invasive Alien Species Act and their importation, rearing, etc. are controlled. The number of designated invasive alien species as of September 2013 is 107, including: 23 mammal species, four bird species, 16 reptile species, 11 amphibian species, 13 fish species, 10 spider species, five crustacean species, eight insect species, 12 plant species and five molluscan and other species. As measures for areas important for the conservation of biodiversity in Japan such as the habitats of rare species and National Parks, the mongoose control projects are conducted in Amami-oshima Island and the Yanbaru area in the northern part of Okinawa Island and the green anole control projects are conducted on the Ogasawara Islands. As measures to control invasive alien species which have been established over large

areas, model control projects are conducted for the raccoon (*Procyon lotor*), the largemouth bass (*Micropterus salmoides*), the Argentine ant (*Linepithema humile*) and others. In the mongoose control projects, capture using traps was started on Amami-oshima Island in 2000 and in the Yanbaru area on Okinawa Island in 2001. Since the number of captured animals per unit of capturing effort is becoming smaller every year, it is thought that the population density of the mongoose (*Herpestes auropunctatus*) is becoming lower. As a result, recovering trends in the population of the Amami spiny rat (*Tokudaia osimensis*), the Ryukyu long-furred rat (*Diplothrix legata*), the Okinawa rail (*Gallirallus okinawae*), etc. have been confirmed. In 2012, the plan for controlling the mongoose was revised based on the results of control projects. The implementation of the second phase plan started in FY2013, with the aim of completely eradicating the mongoose from Amami-oshima Island and the Yanbaru area of Okinawa Island by FY2022.

(4) Reconstruction Efforts after the Great East Japan Earthquake

The great force of nature brought by the earthquake and tsunami in the Great East Japan Earthquake which occurred in March 2011 caused devastating damage to the lives and livelihoods of people particularly on the Pacific coast in the Tohoku Region. This was an opportunity to recognize once again that nature which provides us with plentiful benefits also becomes a threat on occasion.

The Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake formulated by the Reconstruction Headquarters in response to the Great East Japan Earthquake set forth the following measures: considering the reorganization of existing natural parks such as Rikuchu Kaigan National Park and the establishment of Sanriku Fukko (Reconstruction) National Park; implementing various projects including promotion of ecotourism; the realization of a society in harmony with nature through nature restoration; conducting studies on the current situation of the natural environment as well as monitoring; the utilization of disaster-prevention forests based on the concept of disaster reduction; among others. Efforts for reconstruction are being made based on the basic guidelines. In May 2013, an area affected by the Great East Japan Earthquake was designated as the Sanriku Fukko (Reconstruction) National Park. The intention of the designation of the area was to re-evaluate scenic sites in the Sanriku area by taking into account the latest scientific findings and to reorganize Natural Parks in the area in stages, centering around areas with outstanding natural landscapes such as the Rikuchu Kaigan National Park. The area was designated with the aim of contributing to the reconstruction of the area, by further promoting the appropriate use of the area in cooperation with local communities and contributing to local area development.

The Ministry of the Environment, in response to the publication of the Direction for the Reconstruction of the Sanriku Area Using Natural Parks, etc. by the Nature Conservation Committee of the Central Environment Council in March 2012, compiled the Vision for Green Reconstruction Centered around the Establishment of a Sanriku Fukko (Reconstruction) National Park in May of the same year. The vision set forth the implementation of seven projects (Green Reconstruction Project) shown below in cooperation and collaboration with various parties.

<Green Reconstruction Project>

① The establishment of Sanriku Fukko (Reconstruction) National Park (restructuring of natural parks)
② The development of Satoyama and Satoumi field museums and related facilities
③ Tours for enjoying nature in depth using local treasures (reconstruction ecotourism)
④ A trail which connects north and south to deepen exchanges (the Michinoku Shiokaze coastal trail)
⑤ The restoration of connections between forests, rural communities, rivers and the sea
⑥ The promotion of education for sustainable development (ESD)
⑦ Understanding the impacts of the earthquake and the tsunami on the natural environment (natural environment monitoring)

The commission on the restoration of coastal disaster prevention forests of the Forestry Agency created technical guidelines for restoring coastal disaster prevention forests on the Pacific coast (over about 140 km) which were seriously damaged by the tsunami and restoration projects have started on parts of the forests. The Fisheries Agency formulated a master plan for the reconstruction of fisheries immediately after the earthquake and is implementing various policies and measures including the removal of debris in line with a new basic

plan for fisheries created based on the master plan. The Ministry of Land, Infrastructure, Transport and Tourism formulated the Technical Guidelines for the Development of Parks and Other Green Areas for Reconstruction after the Great East Japan Earthquake which would contribute to the development of parks and other green areas which takes ecosystems into consideration. The ministry is supporting restoration and reconstruction efforts by local governments. The Ministry of Education, Culture, Sports, Science and Technology will conduct a project called Tohoku Ecosystem-Associated Marine Sciences where universities and research institutes from around Japan will work together to clarify the mechanisms for changes in marine ecosystems off the Sanriku coast which was affected by the tsunami. Through the project, it will conduct continuous surveys and research into marine ecosystems. Moreover, a post-disaster reconstruction project by the business sector and some of the private organizations was initiated by Tohoku University. This is a biodiversity-conscious voluntary activity called the Tohoku Green Renaissance Project.

After the Great East Japan Earthquake, large quantities of radioactive materials derived from the Fukushima Daiichi Nuclear Power Station were dispersed into the environment in addition to damage caused by the earthquake and the tsunami. Although the effects of radioactive materials on ecosystems and wild animals and plants are currently unknown, analysis is being carried out in cooperation with related research institutes by collecting samples such as plant seeds and rats in order to understand their effects.

(5) The contribution to international efforts toward the achievement of the Aichi Biodiversity Targets

Japan has participated in international cooperation efforts in the field of biodiversity and supported developing countries through international financial mechanisms, etc. The Japanese government will continue to take action for biodiversity conservation from a global perspective. More specifically, it will assist developing countries with their capacity development efforts towards the achievement of the Aichi Biodiversity Targets, promote sustainable conservation of human-influenced natural environments through the Satoyama Initiative and participate in international cooperation centered on the Asia-Pacific region which has a close connection with Japan.

In order to promote efforts based on the Convention on Biological Diversity including the achievement of the Aichi Biodiversity Targets at the global level, it is strongly believed that global efforts need to provide funds, transfer technology and conduct capacity development for developing countries. Therefore, Japan has established the Japan Biodiversity Fund within the CBD Secretariat with the aim of helping developing countries' efforts for capacity development, etc. towards the achievement of the Aichi Biodiversity Targets. The fund is used to hold workshops to help to formulate and revise national biodiversity strategies, among other activities.

Japan chaired the Conference of the Parties (COP) for two years in the period between COP 10 (the Tenth Meeting of the COP to the CBD held in Nagoya City, Aichi in October 2010) and COP 11 (held in Hyderabad, India in October 2012). Therefore, at the meetings of the CBD working groups and subsidiary bodies which discussed the implementation of decisions at COP 10 and conducted pre-negotiations towards COP 11, Japan committed itself to running the meetings and facilitating the discussions, in cooperation with the CBD Secretariat as the COP10 presidency. It also actively contributed to the negotiations. It also helped to organize the meetings of the Working Group on Review of Implementation of the Convention (WGRI) and other meetings.

At COP 10, it was decided that the Parties, other governments and relevant organizations would be invited to participate in the International Partnership for the *Satoyama* Initiative (IPSI), in order to further develop the initiative. The decision was made with the recognition that the *Satoyama* Initiative can be a potentially useful tool to better understand and support human-influenced natural environments for the benefit of biodiversity and human well-being. Based on this decision at COP 10, Japan encouraged the participants of the IPSI, which was launched during the period of COP 10, to share information and work together when conducting their activities, in an effort to promote the *Satoyama* Initiative. As part of its effort to promote the *Satoyama* Initiative internationally, Japan organized a side event with the theme of the *Satoyama* Initiative and the Green Economy during the Rio+20 which was held in June 2012. At the event, IPSI activities which are particularly relevant to the green economy were introduced and the possibility of conducting activities related to the green economy through the IPSI was discussed. In October 2012, the third IPSI Global Conference was held in Hyderabad, India, where the IPSI Strategy was adopted. At the conference, IPSI activities were reported, new

member organizations were introduced and opinions were exchanged under the theme, "Contribution to Achieving the Aichi Biodiversity Targets." At the fourth IPSI Global Conference which was held in September 2013, the five-year IPSI Plan of Action for implementing the IPSI Strategy was approved. At the conference, it was also reported that the *Satoyama* Development Mechanism (SDM) was established as a framework for supporting small-scale projects, as part of collaborative activities between the Ministry of the Environment, United Nations University and the Institute for Global Environmental Strategies (IGES). Six SDM projects were adopted at the end of November 2013. The IPSI had a membership of 155 organizations as of December 2013, including government agencies from 16 countries.

From Wednesday, November 13 to Sunday, November 17, 2013, the 1st Asia Parks Congress was held in Sendai City, Miyagi. The congress was organized by the Ministry of the Environment and the International Union for Conservation of Nature and Natural Resources (IUCN), and about 800 people participated in the event mainly from Asian countries. At the congress, Asian countries shared problems and achievements concerning protected areas including national parks. The congress produced various results which will contribute to cooperation between countries and the strengthening of measures in each country. For example, the Asia Protected Areas Charter (Sendai Charter) was agreed upon as a message from Asia towards the achievement of both nature conservation and local development. The Message from Asia to the 6th World Parks Congress, which summarized the roles that protected areas play in disaster prevention based on the discussions at the working group, was also agreed upon. At the congress, participants also had discussions about the establishment of the Asia Protected Areas Partnership, which will become a framework for strengthening cooperation between Asian countries.
In 2014 and 2015, the Ministry of the Environment will serve as the Secretariat of the International Coral Reef Initiative (ICRI) along with the Thai government. Japan will contribute to the international efforts for the conservation of coral reefs.

(6) The implementation of the CBD Programme of Work on Protected Areas (PoWPA)
The following explains the progress in the implementation of the CBD Programme of Work on Protected Areas (PoWPA), for each field and for the cross-field items. The details of the progress for each type of ecosystem and each field are omitted here because they are summarized in the National Biodiversity Strategy of Japan 2012-2020 and the Annual Report on the Environment, 2013.

Work plans	Implementation status	Relevant part in the national strategy
Forest and biodiversity*	Forests, which occupy two-thirds of the national land, are an important element in the conservation of biodiversity. Besides forest ecosystem reserves and the national parks protection system, the creation of diverse forests and various measures for the promotion of the appropriate conservation/management of forests have also been implemented. Refer to 2.4 (4)④.	Part 3, Chapter 1, Paragraph 5, etc.
Mountains and biodiversity	There are no particular measures limited to mountain areas. However, there are many areas designated as protection areas under the Nature Conservation Law and the Natural Parks Law, and 77.0% of areas at an altitude of 2,000 meters or higher have been designated as national or quasi-national parks. Mountain ecosystems are thus protected by various protected area systems.	Part 1, Chapter 3, Paragraph 2, etc.
Inland water areas and biodiversity	The conservation of wetlands has been implemented by selecting about 170 locations as potential locations for internationally important wetlands, and registering 46 locations as Ramsar sites. In addition, the conservation and regeneration of wetlands that were lost due to development in the past has been conducted.	Part 3, Chapter 1, Paragraph 8, etc.
Marine/Coastal habitats and biodiversity	The method of establishing marine protected areas in Japan was clarified based on basic marine plans, and actions in line with this method have been conducted at home and overseas. Based on the above plans and the Marine Biodiversity Conservation Strategy, the consideration of marine biodiversity conservation has been adopted, such as through the continued identification of marine areas of great importance for marine biodiversity conservation, etc.	Part 3, Chapter 1, Paragraph 9, etc.

Agriculture and biodiversity*	Measures based on the Ministry of Agriculture, Forestry and Fisheries Biodiversity Strategy have been implemented. Refer to 2.4 (4)④.	Part 3, Chapter 2, Paragraph 4, etc.
Climate change and biodiversity*	Other than the implementation of various mitigation measures to combat global warming, the monitoring of the impacts of climate change on biodiversity and the examination of ecosystem networks so that animals affected by climate change can adapt through transfer to other areas have been considered, since the "crisis of biodiversity due to global warming" is regarded as the 4th crisis in the national strategy.	Part 3, Chapter 2, Paragraph 9, etc.
Incentive measures*	As economic measures for promoting efforts regarding biodiversity by various actors, there are subsidies from the national government (biodiversity conservation promotion support projects and greening measures, etc.), tax incentives, subsidies provided by various foundations (Japan Fund for the Global Environment, etc.), indemnity, provision of money from voluntary fundraising and cooperative efforts, and forest environment taxes imposed by local governments, etc.	Part 3, Chapter 1, Paragraph 6, etc.
Ecosystem approach*	This is one of the 7 basic viewpoints of the National Biodiversity Strategy of Japan. For example, adaptive management, which is one of the ecosystem approaches, has been adopted in various legal systems, plans, and measures, such as the Law for the Promotion of Nature Restoration.	Part 1, Chapter 4, Paragraph 1, etc.
Dissemination and enlightenment*	Other than activities under the Japan Committee for United Nations Decade on Biodiversity (UNDB-J), the promotion of and public relations for biodiversity are being conducted through various events, brochures, and the internet, such as a events for the "International Day for Biological Diversity" (May 22) and exhibitions at biodiversity centers, etc.	Part 3, Chapter 2, Paragraph 1, etc.

* Items discussed in detail at the Twelfth Meeting of the Conference of the Parties to the Convention on Biological Diversity

(7) The implementation of biodiversity-related conventions

① The Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention)

In the runup to the 11th Conference of the Contracting Parties to the Ramsar Convention held in July 2012, nine areas in Japan were newly added to the Ramsar List of Wetlands of International Importance ("Ramsar sites"), namely Onuma, Watarase-yusuichi, Tateyama Midagahara and Dainichidaira, Nakaikemi-shicchi, Tokai Hilly Land Spring-fed Mires, Lower Maruyama River and the surrounding rice paddies, Miyajima, Arao-higata and Yonaha-wan. All together 46 wetlands in Japan were added to the Ramsar List. Japan took action for the conservation and wise use of these Ramsar sites. It also actively promoted the resolution, "Enhancing biodiversity in rice paddies as wetland systems" (Rice Paddies Resolution) which was adopted at the 10th Conference of the Contracting Parties, by for example collecting and disseminating information about local good practices in cooperation with NGOs, etc. It also cooperated with Asia-Pacific countries for the conservation and wise use of wetlands of international importance in their countries.

② The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

At the16th Conference of the Parties to the CITIES which was held in March 2013, 15 species of pond turtles (*Emydidae*) including the Japanese black-breasted leaf turtle (*Geoemyda japonica*) that Japan had proposed were included in Appendix II, which is the list of species subject to trade regulations. Based on the convention, Japan controls the importation and exportation of threatened wild animal and plant species, in accordance with the Foreign Exchange and Foreign Trade Act and the Customs Act. In addition, it controls the domestic transfer of ownership of species listed in Appendix I of the convention in accordance with the Act on the Conservation of Species. The government also worked to reduce the number of illegal trades for species subject to control under the convention including online trades, through coordination and cooperation between the relevant ministries, agencies and organizations. Japan also helped with the projects that were conducted by the CITIES Secretariat.

③ The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention)

In Japan, Yakushima, Shirakami-Sanchi, Shiretoko and Ogasawara Islands are inscribed as natural heritage sites on the World Heritage List prescribed by the World Heritage Convention. For these Natural Heritage Sites, various conservation activities including monitoring survey, patrol, alien species control, and other measures are implemented for preserving or understanding usage pattern of the heritage sites. In addition, there are Regional Liaison Committees made up of the relevant ministries, agencies, local governments and local stakeholders as well as Scientific Councils made up of experts. Through these frameworks, the heritage sites have been protected and managed appropriately through cooperation between the stakeholders. In particular, with regard to Ogasawara Islands which was inscribed on the World Heritage List in 2011, high quality protection and management activities have been conducted including alien species control following the recommendations made by the World Heritage Committee. For Yakushima, a new World Heritage Site Management Plan was formulated in 2012 October through cooperation between the relevant ministries, agencies and local governments. In the same way, the World Heritage Site Management Plan for Shirakami-Sanchi was formulated in 2013 October.

Fujisan for which the government submitted the nomination document as world cultural heritage to the World Heritage Centre in January 2012, at the 37th session of the World Heritage Committee held in June 2013, Fujisan was inscribed on the World Heritage List as “Fujisan, sacred place and source of artistic inspiration.”

In January 2013, the government decided to add “Amami-Ryukyu” to its Tentative List, which is the prerequisite for nomination for the World Heritage List. In April 2013, the government established Amami-Ryukyu World Natural Heritage Candidate Site Scientific Council comprising experts for scientific and academic consideration to designate areas to be nominated to the List, resulting in the decision to designate the four areas of Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island.

The government will continue the consideration in collaboration with relevant organizations and stakeholders in the areas, toward the inscription on the World Heritage List.

2012 was the 40th anniversary of the World Heritage Convention by the UNESCO General Assembly. At this occasion, in October 2012, the Ministry of the Environment and the Forestry Agency jointly organized the Symposium on the World Natural Heritage of Japan in Kagoshima, Japan, to commemorate the 40th anniversary of the World Heritage Convention. In November, the “Closing Event of the Celebration of the 40th Anniversary of the World Heritage Convention” which concluded all the commemorative events held around the world, was held in Kyoto, Japan. The event was hosted by the Ministry of the Environment, the Ministry of Foreign Affairs, the Agency for Cultural Affairs and the Forestry Agency with the UNESCO World Heritage Centre as a co-organiser. The Kyoto Vision was released at the end of the event. The document reviewed the achievements of the World Heritage Convention over the past 40 years and gives the future direction of the convention.

④ The United Nations Convention to Combat Desertification (UNCCD)

Under the UNCCD which came into effect in 1996, developing country parties establish action programmes for measures to combat desertification and developed country parties support the implementation of the measures in an effort to combat desertification. Japan accepted the convention in 1998. It has been participating in and contributing to the Conference of the Parties to the UNCCD and promoting international efforts while cooperating with other countries, international organizations, etc.

In addition, Japan supports the UNCCD activities as the second largest contributor after the US.

It also conducted a study on the utilization of technologies for combating desertification with a view to providing scientific and technical support for the UNCCD as well as projects for agricultural and rural development, forest conservation and afforestation, water conservation, etc. with Japan International Cooperation Agency (JICA) and other agencies.

Question 8: How effectively has biodiversity been mainstreamed into relevant sectoral and crosssectoral strategies, plans and programmes?

2.4 Mainstreaming of biodiversity

It is necessary that the importance of the conservation of biodiversity and the sustainable use of its components should be widely recognized by diverse entities including national and local governments, businesses, NPOs, NGOs, citizens and that this recognition leads to each entity taking action accordingly. This is called "the mainstreaming of biodiversity." Global Biodiversity Outlook 3 (GBO3) points out that effective action to address biodiversity loss depends on addressing the underlying causes or indirect drivers of that decline, such as consumption activities and lifestyles. "Mainstreaming biodiversity" is also the first target of the Aichi Biodiversity Targets.

This section explains recent activities for mainstreaming biodiversity, including the activities of the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J), advanced activities by local governments and trends in the activities to conserve biodiversity by businesses.

(1) Activities of the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J)

The 10 years from 2011 to 2020 were declared to be the United Nations Decade on Biodiversity, during which all parties of the international community would work together to tackle the issue of biodiversity in order to contribute to the achievement of the Aichi Biodiversity Targets. This led to the establishment of the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J) in September 2011. The committee is made up of academics, experts, cultural leaders, the business community, the media, conservation and campaigning organizations such as NGOs, local governments, relevant government ministries and agencies. The committee is conducting various activities with the aim of mainstreaming biodiversity (Figure 2-3-1). The following introduces some of the activities.

① The recognition of best practices conducted by various parties

In order to encourage various parties to participate in activities for achieving the Aichi Biodiversity Targets and to encourage them to cooperate with each other, UNDB-J selects and recognizes best practices that UNDB-J recommends out of the projects which are conducted through cooperation between various parties. UNDB-J then promotes the selected projects through PR activities. More specifically, UNDB-J comprehensively assesses, selects and recognizes best practices that UNDB-J recommends, from the standpoints of "cooperation between various parties," "the importance of their efforts," "the effect of the PR activities about their efforts," etc. Best practices are selected from various projects conducted by different parties working towards the achievement of the Aichi Biodiversity Targets, that are registered by the Nijyu-maru Project (Double 20 Campaign) which is conducted by the Japan Committee for International Union for Conservation of Nature and Natural Resources (IUCN-J). As of September 2013, 31 projects have been recognized by UNDB-J as best practices (see the supplementary document for detail). One of the projects is "Tohoku Green Renaissance from the Sea and the Rice Field." With the aim of achieving "Green Renaissance" in areas affected by the Great East Japan Earthquake by taking biodiversity restoration into account, various parties including citizens, Tohoku University and NPOs are conducting various activities in cooperation with each other, such as the restoration of rice fields and participatory ecosystem monitoring. The project was valued highly because it supported affected farmers by selling branded rice which was grown in a biodiversity-conscious way, in addition to contributing to the conservation and restoration of biodiversity in disaster-affected areas.

Recognized projects can use the UNDB-J logo (Figure 2-3-1). UNDB-J also actively promotes the recognized projects by putting them on the UNDB-J website, discussing them at the National Meetings on Biodiversity as well as at regional seminars organized by UNDB-J.

② My Declaration to conserve biodiversity

In order for each individual to understand the connection that their life has with biodiversity, and to take action in their everyday life, UNDB-J encourages people to participate in the "My Declaration" program by choosing actions that they want to take, from the following five actions and declare it.

Act 1: Eat locally produced seasonal food. By enjoying benefits of nature through eating seasonal and local specialty food, you may become more aware of changes in your immediate environment, and learn

something about the region's food culture.

Act 2: Get more in touch with nature and animals by visiting botanical gardens and zoos. Nature is the best teacher when learning about biodiversity. You can deepen your understanding of biodiversity by using the five senses to experience nature and by learning about the characteristics of local areas and the ecology of organisms in the field.

Act 3: Try communicating nature's beauty and expressing your appreciation with photographs, pictures, and writing. If you become interested in living organisms and various types of nature, and express your interest in various ways, it will give you and the people around you such as family and friends the chance to realize the wonder of nature.

Act 4: Participate in regional and national activities to protect the threads that connect living organisms, nature, people and culture. Through participating in various activities in different parts of Japan including observation, surveys, conservation and the restoration of nature and living organisms, you can learn about the connection between living organisms and the connection between people and nature in the field.

Act 5: Choose products and services bearing eco-marks. Carefully selecting products and services, which are produced and sold by taking biodiversity into consideration, can become the driving force for achieving a society that lives in harmony with nature.

The "My Declaration" program was used in the National Meetings on Biodiversity, regional seminars, etc. which were organized by UNDB-J. Its utilization is also promoted on the UNDB-J website. In FY2012, the program was used in 91 events (in which a total of about 20,680 people participated). Also, biodiversity mainstreaming efforts using MY Declaration have been being made by implementing an annual awarding ceremony - Biodiversity Action Awards Japan, for the relevant activities based on the 5 respective actions in MY Declaration, and conducting other activities such as introduction of those actions on the websites.

(2) Advanced activities by local governments

There is recognition that local governments should play an important role in the conservation of biodiversity and the sustainable use of its components. For example, at COP 10, the Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity was approved. The plan expects local governments to take initiatives for biodiversity conservation, such as the formulation of Regional Biodiversity Strategies. In Japan, the Local Government Network on Biodiversity was established in October 2011, through which cooperation between local governments has progressed. With regard to Regional Biodiversity Strategies stipulated in the Basic Act on Biodiversity, 26 out of 47 prefectural governments had formulated strategies by November 2013, and 45 prefectures have either formulated, are in the process of formulating or are considering the formulation (Figure 2-3-2).

The Aichi prefectural government formulated its Regional Biodiversity Strategy in 2009, before COP 10 was held. It then revised the Strategy in March 2013 in order to include the content of the Aichi Biodiversity Targets. The Strategy stipulates the use of the "Aichi method" where diverse local parties including residents, businesses, NPOs and local government agencies work together to develop ecosystem networks, while also strengthening the connection between people, in order to create an "Aichi Where People Live in Harmony with Nature." More specifically, the Strategy stipulates the utilization of the Biodiversity Potential Map as a tool for diverse parties to share goals. It also stipulates the introduction of "Aichi Mitigation" where the impacts of development, etc. on nature will be avoided or minimized and for impacts which cannot be avoided, mitigation measures will be taken by providing sites or restoring ecosystems that will contribute to the development of ecosystem networks.

Kuromatsunai-cho in Hokkaido, which is known as the northern limit for beech forests, formulated its Regional Biodiversity Strategy in March 2012, in order to provide residents with more chances to experience the benefits of the nature they have. It also involved the surrounding municipal governments and they jointly launched the Shiribeshi Area Biodiversity Council. The council is made up of 14 municipalities connected via an ecosystem network which covers a large area. It is the first council of its kind in Japan. The council is currently formulating a plan for securing links between forests, rural areas, rivers and the sea over a large area, as well as revitalizing the local economy in cooperation with various industries such as agriculture, forestry, fisheries and tourism.

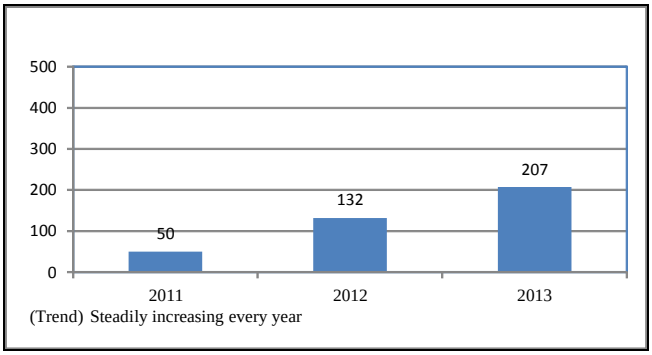
Figure 2-3-1 UNDB-J organization chart (left) and UNDB-J logo (right)

[Case study: Nijyu-maru Project (Double 20 Campaign)]

In order to contribute to the achievement of the "Aichi Biodiversity Targets," the Japan Committee for the International Union for the Conservation of Nature and Natural Resources (IUCN-J) has promoted the "Nijyu-maru Project (Double 20 Campaign)", which has made a declaration and takes action on the relationship between its own projects and 20 individual targets. Since not only groups engaging in natural area protection, but also the participation of national/local governments, companies (especially those engaged in the consumption of natural resources and production using the natural environment), as well as educational research institutes and the activities of citizens are essential to the project, thus the project aims at the following for the achievement of the Aichi Biodiversity Targets; 1) To call for participation and taking action by providing information on the Aichi Biodiversity Targets, 2) To encourage various sectors to become involved in the achievement of the Aichi Biodiversity Targets, 3) To promote these activities and share knowledge and case examples of efforts being made in relation to each individual target so as to summarize the overall situation that is a combination of all such activities (to indicate the progress and achievement status of the targets), and 4) To create a place to assess (to make policy proposals) the target achievement status from the unique perspective of the citizens. Groups that made a declaration can use the logo of the project and participate in the network. The number of registrations with the Nijyu-maru Project has been steadily increasing.

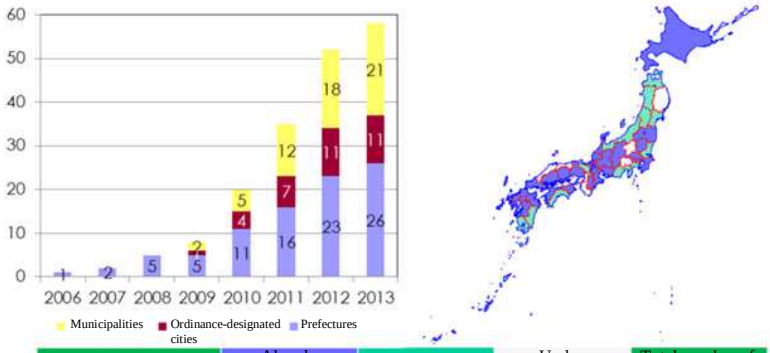
Figure 2-3-2 Logo of the Nijyu-maru Project

Figure 2-3-3 Registrations with the Nijyu-maru Project



* Data from the end of fiscal year are used for 2011 and 2012, and the end of August for 2013.

Figure 2-3-2 Formulation status of the Regional Biodiversity Strategy



December 2013	Already formulated	Under formulation	Under consideration, etc.	Total number of local authorities
Prefectures	26(+1)	13(+4)	7(+2)	47
Ordinance-designated cities	11	3	5(+1)	20
Municipalities	21	33	38 *	1722
Total	58	49		1789

* The numbers in brackets represent the number of local authorities where the strategy has been revised.

(3) Trends in activities by businesses in the biodiversity field

Activities of businesses are supported by benefits of nature (ecosystem services) including the supply of water, soil, food, fiber, wood and fuel. Their activities also affect ecosystems and biodiversity. Businesses also have the role of distributing the benefits of nature to consumers through the sale of products and the provision of services. Businesses are major actors in the socio-economy. Therefore, it is essential for them to recognize the importance of biodiversity and to commit themselves to its conservation and the sustainable use of its components, in order not only to accelerate the shift to a society in harmony with nature, but also to enable them to continue their businesses sustainably into the future.

The Japan Business and Biodiversity Partnership is a program voluntarily established in 2010 by the business community and others. In order to encourage businesses to take action for the conservation of biodiversity and the sustainable use of its components, the program provides and shares information via the website and publishes a newsletter, as well as surveying the activities conducted by corporate members each year. The results of the surveys show that the awareness of businesses and activities by businesses have increased. For example, 50% of businesses included the idea of biodiversity conservation in their management principles and policies or environmental policies as of 2010, but the percentage increased to 85% by 2012. The membership of the Japan Business and Biodiversity Partnership was 424 companies and organizations when it was established. The membership has steadily increased since then and it had reached 501 companies and organizations by April 2013. There are also other voluntary activities conducted by the business community. For example, the Nagoya Chamber of Commerce & Industry formulated a guidebook called “Business Activities and Biodiversity” in 2012, in order to raise awareness among small and medium enterprises (SMEs). The guidebook explains in a clear manner how to assess the relationship between business activities and biodiversity as well as how to work on biodiversity conservation, in a way that helps SMEs to take action for biodiversity conservation. In addition, Japan Business Initiative for Biodiversity (JBIB) was established to conduct collaborative researches on biodiversity conservation from the global view point, reflect the results to the companies’ actions, and promote businesses’ actions that contribute to the conservation of the biodiversity. As a part of its activities, “a tool kit composed of three practical tools for sustainable land use” was developed and initiatives that are in line with the tool kit are certified by the Association for Business Initiative in harmony with Nature and Community. Moreover, there are various actions taken by the businesses such as holding events to promote companies’ biodiversity-conscious actions.

In order to encourage businesses to take biodiversity-conscious action, it is also important for people to shift to biodiversity-conscious consumption activities. As measures to accelerate such a shift, there are certification systems initiated by the private sector, which encourage the sustainable management of biological resources that takes into account biodiversity conservation, as well as encouraging the distribution of products made of

sustainably managed resources. For example, efforts that are focused on the supply chains are being made by: the Forest Stewardship Council (FSC) and the Sustainable Green Ecosystem Council (SGEC) for forestry management and the management and distribution of forest products; the Marine Stewardship Council (MSC) and Marine Eco-Label (MEL) Japan for fishery management and production, processing and distribution of marine products; FairWild (the FairWild Foundation) for the use of wild plants; and the Roundtable on Sustainable Palm Oil (RSPO) for the production and distribution of palm oil. It is important to encourage such socio-economic activities and to expand systems through which many people can contribute to the conservation of biodiversity and the sustainable use of its components.

(4) Efforts for other related activities

①The promotion of science and technology

＜The promotion of science and technology on marine＞

The Ministry of Education, Culture, Sports, Science and Technology conducts a project called “Formation of Tohoku Marine Science Center” where universities and research institutes from around Japan work together to clarify the mechanisms for changes in marine ecosystems off the Sanriku coast which was affected by the tsunami. Through the project, it conducts continuous surveys and research into marine ecosystems.

On the basis of recent growing public awareness of changes in the environment of oceans by such as global warming and sustainable supply of marine organisms as food resources, MEXT is promoting “Improvement of preservation and management technology of marine living resources” project for R&D that lead to innovative production by understanding the physiology of marine organisms and R&D to comprehensively understand ecological systems with the aim of accurately predicting change in the amount of marine organism resources.

JAMSTEC studies marine biodiversity, especially that of the deep sea, and related subjects, such as interactions among various marine organisms and functions.

Biological Information System for Marine Life (BISMaL) is an integrated data system including photographs, movies, distribution records, references and brief descriptions of morphology/ecology of each species or its higher taxon. Although BISMaL is a data system of JAMSTEC, it also works as the system of the Japan Regional OBIS Node (J-RON) of the Ocean Biogeographic Information System (OBIS). Created by the Census of Marine Life, OBIS is now part of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, under its International Oceanographic Data and Information Exchange (IODE) programme.

Occurrence records are stored on OBIS in a "DarwinCore" format. Data and information collected and integrated by J-RON are opened to the public and provided to OBIS through BISMaL. BISMaL is contributing to global data sharing and information exchange.

②Medical sector

＜Evaluation of the impacts on biodiversity based on the Act on the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms (Cartagena Act)＞

Act on the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms (Cartagena Act) is being implemented appropriately in the field of pharmaceuticals. The number of the approval of Type 1 Use (use in open system) had been 0, and the number of the confirmation of Type 2 Use (use in closed system) had been 49, during the past 3 years in regard to pharmaceuticals. The government will continue to make efforts to prevent the spread of genetically modified organisms into the environment. It will also ensure the quality, effectiveness and safety of pharmaceutical products developed using gene recombination technology.

＜Utilization and Preservation of Genetic Resources＞

National Institute of Biomedical Innovation (NIBIO) Research Center for Medicinal Plant Resources (RCMPR) is dedicated to the proactive collection and storage of medicinal plants. It is also engaged in the following research activities: (i) the cultivation and breeding of medicinal plants, (ii) the chemical and biological evaluation of active plant constituents, (iii) the development of underutilized plant resources of foreign origin, and (iv) tissue engineering of medicinal plants. In order to ensure the sustainable use of medicinal plants, valuable seeds are cryopreserved to save genetic material. Moreover, the RCMPR maintains close contact with herbariums, botanic gardens, and research institutes around the world, sending and exchanging stock lists and seeds where appropriate to enrich its collection. The NIBIO’s Rare Disease Bank

stores biological samples collected from patients with intractable rare diseases, and provides them to scientists for research purposes. The NIBIO's JCRB Laboratory Animal Resource Bank collects, maintains, and distributes specific strains of experimental animals, including disease models. This bank is actively disseminating useful information on experimental animals. The NIBIO's Tsukuba Primate Research Center owns a large-scale breeding colony of cynomolgus monkeys, which provides laboratory-bred quality primate species for medical research purposes. As of April 1, 2013, the NIBIO has undertaken full responsibility for the distribution of biological materials, business that was previously run jointly by the Japan Health Sciences Foundation and the NIBIO's JCRB Cell Bank.

③Food sector

＜Use of genetic resources in food sector＞

Regarding foods and food additives produced by recombinant DNA techniques (hereafter GM foods), two studies about based on Health and Labour Sciences Research Grants are under way. These contribute to accumulate scientific knowledge to ensure the safety of foods made by applying modern biotechnology and they also contribute to collect information about newly developed biotechniques.

While referring to such information, we develop the detecting methods for unapproved GM foods.

④Agriculture, forestry, and fisheries

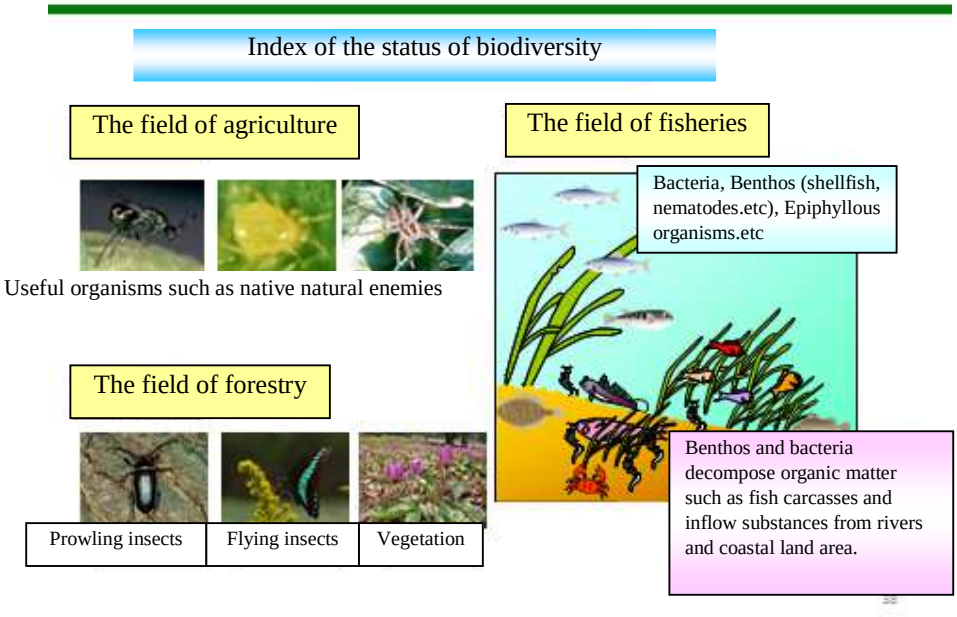
＜The Ministry of Agriculture, Forestry and Fisheries Biodiversity Strategy＞

Agriculture, forestry and fisheries are essential activities for supplying the food and materials required for human survival. In addition, in Japan, agricultural, forestry and fishery activities have played an important role for generations in the creation of natural environments close to where people live, which enabled the inhabitation of diverse species. Areas where agricultural, forestry and fishery activities take place have developed into diverse rural districts with diverse cultures characteristic to local areas by coexisting with diverse organisms, while serving as production and living spaces for people. In order to maintain or develop the biodiversity-rich rural districts created by human interaction with nature and to hand down a biodiversity-rich Japan to future generations, it is essential to conserve biodiversity and sustainably use its components through conducting sustainable agricultural, forestry, fishery activities as well as activities related to these industries. Forests, rural areas and social ecological production landscapes such as *Satoyama* areas and *Satoumi* are connected to each other and people live in and around these areas as well as engaging in the agricultural, forestry and fishery industries. In light of the links between forests, rivers and the sea, it is necessary to take conservation measures for biodiversity throughout the ecosystem containing these components.

Therefore, on February 2012, the Ministry of Agriculture, Forestry and Fisheries (MAFF) revised MAFF's Biodiversity Strategy, which had been formerly prescribed on July 2006, in response to the change of circumstances such as establishment of basic act on biodiversity, occurrence of the Great East Japan Earthquake and the results of the 10th meeting of Conference of Parties including strategic plan 2011-2020 and Aichi Target. Based on the strategy the government will implement measures to support biodiversity-oriented agricultural, forestry and fishery activities as well as revitalizing rural communities which support such activities, including: the development of the necessary conditions for farmers to be able to vigorously engage in organic farming which enables the inhabitation of various organisms; direct support for farming activities that are effective in biodiversity conservation; and the facilitation of diverse and continuous utilization of *Satoyama* forests. The government will also promote understanding among various groups of citizens about biodiversity in agriculture, forestry and fisheries through the quantitative evaluation of biodiversity sustained by agriculture, forestry and fisheries. In addition, it will promote local innovative efforts made by various entities, as well as promoting contributions to the conservation of the global environment through agricultural, forestry and fishery activities.

［Case studies：Development of biodiversity index of agriculture, forestry and fisheries】
It aims the development of index plants and evaluation methods that can evaluate effects in the field level on promoting or conserving biodiversity by agriculture that emphasis on biodiversity such as “environment-oriented agriculture” based on a scientific basis. The MAFF’s trust project “development of biodiversity index and evaluation methods that is useful for agriculture” had established on 2008. After the study period of for years, the MAFF had developed certain index plats and evaluation methods and published the manual which explains research and evaluation methods.

Figure 2-4-1: Development of biodiversity index of agriculture, forestry and fisheries



＜The infrastructure maintenance considering biodiversity＞
In the farm village of Japan, various kinds of environment (secondary nature), such as drainages, reservoirs, and the grove of miscellaneous trees, which can be secondary forest, as well as farmlands including rice paddies, have been formed through human approaches including agriculture, become habitats for many animals, and formed beautiful landscapes.
In conserving the environment for such farm villages, efforts for the appropriate management and maintenance of agricultural infrastructure considering the harmony with the environment and approaches for sustainable agriculture, including conservations of the habitat and environment for animals and ensured migration channels, are required.
The government implements the maintenance of the infrastructure considering biological diversity on the basis of "the rural district environment maintenance master plans" established by municipalities as a basic plan for the environmental conservation of the farm village areas. Those plans have been established by 2,764 (as of March, 2013) out of 3,148 municipalities (total number of municipalities as of March, 2004).

＜The regional space policies in forests＞
Forests account for two thirds of Japan’s total land area, consisting of diverse forests ranging from artificial forests to primeval natural forests, and they are a key element for the conservation of biodiversity as habitats of diverse wild animal and plant species. In addition to the role of conserving biodiversity, forests have various other functions, for example they serve as carbon sinks for curbing global warming, prevent soil run-off, conserve water and provide timber, thus serving as the foundation for the environment on which humans depend for their survival. Therefore, it is necessary to maintain the multiple functions of forests comprehensively and continuously.
Under these circumstances, the government reviewed the Fundamental Plan of Forest and Forestry in July

2011. According to the target on fulfillment of forest's multiple functions in the plan, the government intend to enhance cyclic usage of forest resources through management of single-storied plantations where particularly function of forest production is expected, as well as to introduce single-storied plantations into multi-storied plantations considering the factor such as nature conditions for further exercising function of public benefit.
Considering the factor that all forests contribute to biodiversity conservation as habitats for diverse organisms, the plan, which based on the idea of adaptive management taking into account uncertainties involved in forest ecosystems, aims that forests are allocated certain wide areas which consist of various growing stages and species that suitable for different nature and location conditions even the forests continue to change by disturbances.
National forests, which account for 20% of Japan's total land area and 30% of the forested area, covers remote mountainous backbones and catchment basin areas, and includes varieties of forests from primeval natural forests to artificial forests, playing an important role in conserving biodiversity and allowing citizens to enjoy comfortable lives. On national forest, the government has conserved and managed natural forests environment as "Protected Forest" and "Green Corridor" where primeval forest ecosystems and the forests where rare species live while concerning about the cooperative implementation of national forest projects and measures including the conservation of biodiversity in forests and private sector forests policies. It also implements appropriate management and conservation of national forest as a whole.
Furthermore, the government will contribute to biodiversity conservation on a global scale through international cooperation for promoting forest conservation and sustainable forest management.

⑤ Bioindustries

＜Sustainable Use of biological resources＞
The Ministry of Economy, Trade and Industry (METI) established NITE Biological Resource Center (NBRC) within National Institute of Technology and Evaluation (NITE) as the core Biological Resource Center in Japan based on the understanding that proper access to biological resources in other countries pursuant to the Convention on Biological Diversity (CBD) is essential for supporting the development of bioindustry. Since its inauguration, NBRC has been steadily carrying out its duties of preservation and distribution of microbial resources, contributing to acquiring and maintaining access routes to overseas biological resources as well as the development of global network of Biological Resource Centers. Development of such scheme allows companies and researchers in Japan to use biological resource obtained both domestically and abroad stably with a sense of security, thus NBRC has also been making substantial contribution in that regard.

NBRC started the consolidation of biological resources including exploration and collection of biological resources domestically and abroad, identification, characterization, proliferation, and preservation of such resources. As a result, combined total of NBRC strains and R&D strains adds up to 81,991 strains (as of March, 2013), and they have been preserved and distributed. In addition, NBRC has been providing whole genome sequence information on various industrially useful microorganisms, such as Aspergillus, to users upon their distribution. While at the same time, NBRC has been trying to strengthen its system by adding new service of backup preservation in which industrially useful microorganisms owned by private sectors in Japan are securely preserved.

In the fiscal year of 2012, NBRC distributed 8,084 NBRC strains for the use of quality control of medicinal products, product testing based on Japan Industrial Standards (JIS), R&D on food products, brewing, and agriculture. In addition, NBRC initiates joint research and joint projects for facilitating commercialization and R&D. Currently NBRC holds 21,682 R&D strains, which are provided to companies in pharmaceutical, food, and chemical industries and universities in large quantity for R&D on exploration of useful materials derived from microorganisms and their commercialization.

NBRC serves as the core Biological Resource Center (BRC) in Japan with world-leading number of properly maintained strain holdings and their distribution cases. In order to maintain high quality of the strains, NBRC obtained the certification of ISO9001 for quality management.

Through the activities of the Asian Consortium for the Conservation and Sustainable Use of Microbial

Resources (ACM) and collaboration with BRCs in various countries, NBRC has been implementing ex-situ conservation and smooth cross-border transfer of microorganisms based on the CBD. As a part of its scheme, NBRC has been actively participating in the joint research project in the area of "Research contributing to sustainable utilization of bioresources" under the SATREPS* that has been carrying out in cooperation between two Japanese government agencies: the Japan Science and Technology Agency (JST) and the Japan International Cooperation Agency (JICA). In the project, NBRC has been contributing to the development of BRC in Indonesia and implementing the transfer of microorganisms obtained to Japan. Moreover, NBRC has also been carrying out the joint project on "curator course program for microbial resource management" that aims for capacity building on BRC management in Thailand.

Moreover, NBRC and six countries (China, Indonesia, Mongolia, Myanmar, Thailand, and Vietnam) have concluded Memoranda of Understanding (MOU) and Project Agreement (PA) concerning conservation and sustainable use of microbial resources on a bilateral basis, allowing reciprocal transfer of microbial resources pursuant to the CBD. By allowing the distribution of such transferred microbial resources to users, the scheme makes companies and researchers in Japan possible to access and obtain the overseas microbial resources. Furthermore, the scheme makes it possible for companies and researchers in Japan to go to providing countries with NBRC staff and directly explore the microbial resources on site.

*SATREPS (Science and Technology Research Partnership for Sustainable Development) is a Japanese government program that promotes international joint research targeting global issues.

⑥Urban Areas

＜Formation of ecological networks via green spaces in cities＞

Japan is promoting formation of ecological networks through green spaces such as urban parks, in an effort to secure biodiversity in cities. Specifically, it has formulated the Technological Considerations in Securing Biodiversity under Master Plans for Greenery, and has been promoting the formulation of Master Plans on Greenery that encourages securing of biodiversity in cities. Moreover, the government is putting efforts in further promoting the conservation of green spaces and greenery areas in order to realize the Master Plans for Greenery. This promoting effort is being made by local governments through the measures including improving areas such as urban parks, encouraging the use of the Greening Area System of promoting the creation of green spaces in privately owned land, as well as the Local Authority Ordinance System for Green Space Ratios in District Planning. Furthermore, City Biodiversity Index (indicators by which the status of biodiversity in cities and the promotion status of measures can be quantitatively determined through data such as the ratio of green spaces and the like, the number of flora and fauna species, and the status for the formation of ecological networks) have been formulated to help promoting the securing actions for biodiversity specifically in cities. This indicators support local governments to assess the status of biodiversity in cities as well as to evaluate the progress in the implementation of the series of measures for securing biodiversity in cities.

Figure 2-4-2: Conceptual design of urban ecological networks

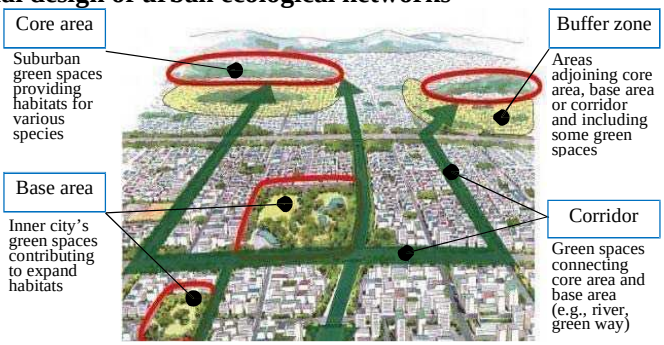


Table 2-4-1: The City Biodiversity Index (draft: formulated in May 2013)

I. City profile	• Size (Area of administrative districts, area of city planning areas, area of areas zoned for urbanization) • Population (Total population, population of city planning areas, population density) • Physical features (Average annual temperature, annual precipitation, elevation)	
II. Indicators	Diversity of ecosystems and habitats	Indicator 1. Current status of green spaces, etc. (ratio of green spaces and the like that have the potential for securing biodiversity in cities)
		Indicator 2. Status of green areas and the like that are maintained pursuant to laws and ordinances (ratio of green spaces and the like that have the potential for securing biodiversity in cities and whose continuity is ensured by laws and ordinances)
		Indicator 3. State of ecological networks in cities
		Indicator 4. Status of plant and animal species (status for the numbers of plant and animal species inhabiting cities)
	Ecosystem services	Indicator 5. Status of ecosystem services
	Cities' initiatives	Indicator 6. Status of the government's biodiversity initiatives (status for consideration given to securing biodiversity in urban administrative plans)
		Indicator 7. Status of participation by residents and others in administrative plans (status of participation by residents, companies, and others in urban administrative plans related to securing biodiversity)

⑦Conservation of river environments

＜Formation of ecological networks based on rivers＞

Water systems such as rivers and other types of inland waters, wetlands, and so forth are important bases for biodiversity. They play a role as important linchpins in the country's ecological networks by connecting forests, agricultural land, cities, coastal regions, and more. When improvements to and the management of rivers is carried out, emphasis is placed on the natural functions found along the rivers in their entirety, with forethought also given to harmony with the life in the local region, as well as its history and culture. Japan promotes initiatives for nature-oriented river works that conserve and create the habitat and breeding environments for living creatures that rivers inherently possess, as well as diverse river landscapes. In conjunction with river improvements, in partnership with a diverse array of local actors, it also promotes the restoration of wetlands—which serve as habitat environments for a diverse array of living creatures—that had been lost through past development.

[Case study: Formation of ecological networks based around rivers]

In the Maruyama River basin region (Toyo-oka City, Hyogo Prefecture) MLIT, which is the river administrator, has been establishing wetlands (increase of approximately 50%) in conjunction with flood control measures as an initiative to return the Oriental Stork (*Ciconia boyciana*) to the wild. It has also engaged in regional development using the Oriental Stork as a symbol, such as the cultivation and sale of "Oriental Stork-friendly Rice" through organic farming techniques via local residents, NPOs, and others. It has been confirmed that there are Oriental Storks currently living in the wild, and in July 2012 the "Murayama River Basin and the Surrounding Paddy Fields" was registered as a Ramsar Site.

What is more, in the Kanto Region MLIT has taken the lead in deploying initiatives geared towards the formation of ecological networks through partnerships with Noda City and other local municipalities, NPOs, and others.

Figure 2-4-3: Initiatives to restore Oriental Stork to the Maruyama River basin region

Photo 2-4-1: Examples in Kanto

(MLIT)
Wetland restoration through the excavation of flood channels

(Noda City)
Cooperation with municipal residents (resident farm)

(Noda City)
Brown rice vinegar farming technique

⑧Conservation of the ocean environment

＜Bay Renaissance Project＞

Renaissance Promotion Conference comprised of relevant government ministries and agencies, as well as local municipalities, were organized for Tokyo Bay, Osaka Bay, Ise Bay, and Hiroshima Bay to work towards improving the water quality in closed water areas and creating abundant seas. These comprehensively promote measures such as improving and monitoring ocean environments via measures to reduce inflow loads from terrestrial areas and through the creation of tidal flats and seaweed beds (Bay Renaissance Project). A certain measure of success has been acknowledged regarding the initiatives from this, such as reducing the pollutant load from continental areas and confirmation that living things inhabit the tidal flats and shallow bottoms that were regenerated. The plan is to continue promoting Bay Renaissance Project in an ongoing manner. Specifically, the following countermeasures and measures are being carried out.

- The conservation, regeneration, and creation of tidal flats, shallow bottoms, and so forth through the effective use of dredged soil and the like, as well as the backfilling of deeply excavated sites.
- The collection of floating trash and oil, and the promotion of clean-up activities by NPOs and others.
- The promotion of monitoring designed for the purposes of fostering interest for the environment among the people and river basin residents and clarifying the mechanisms of eutrophication.
- Promoting the installation of port structures that exist in symbiotic with living things in conjunction with measures against deterioration.
- When it comes to advanced wastewater treatment in sewers, verify treatment technologies through operation and maintenance that use the existing facilities, disseminate and deploy these, and make improvements to combined sewer systems.
- Promote structural improvements that can address environmental improvements through the combined efforts of the public and private sector through partnerships and cooperation between a diverse array of actors.

＜Conservation and construction of seagrass beds and tidal flats＞

MAFF, in collaboration with prefectural governments concerned, has promoted renovation and development of underwater plant beds and tidelands with methods depending on sea area environment and also has promoted conservation management activities like extermination of predator by various labors mainly fishermen, spread and transplant of seaweed and bivalve saving genetic diversification and local endemism, and tillage of fishing grounds. The Long Term Plan on Improvement of Fisheries Infrastructures established in March 2012, is targeting renovation and development of underwater plant beds and tidelands at about 5,500 ha for five years from 2012 to 2016.

In order to achieve the target, MAFF, in collaboration with prefectural governments concerned, has promoted renovation and development of underwater plant beds and tidelands through Fisheries Infrastructures Improvement Projects. In 2012, the first year of the project, about 738 ha of underwater plant beds and tidelands were renovated and newly developed.

In addition, MAFF has supported to promote conservation activities to demonstrate multiple functions of fishing industry and fishing communities by fishermen and local societies, contributing to maintenance and recovery of functions of underwater plant beds and tidelands.

Question 9. To what extent has the National Biodiversity Strategy of Japan been implemented?

2.5. Implementation Status for the National Biodiversity Strategy of Japan

The National Biodiversity Strategy of Japan 2012-2020 was enacted in September 2012, and an inspection of its implementation status as of September 2013 has been performed. Approximately 700 measures were listed in this national strategy, and after the passage of one year since its enactment about 3% of the measures had achieved their goals. These include the registration of World Heritage Sites, the revision of the Act on the Conservation of Species and the Invasive Alien Species Act, and the formulation of the Manual on Agricultural Chemical Risk Assessments for Birds and Management Techniques. Moreover, progress has been seen for just about all of the measures, as evidenced by the fact that work has been started or progress is being made on 95% of the initiatives, while preparations are being undertaken towards implementing measures for the remaining 1% plus of measures. Of the 50 numerical targets set forth in the national strategy, there are 42 items if you exclude the eight items for which no specific start has been reached for the measures or for which the numerical values were not updated. Seven of these items have achieved their targets. These include the number of implementation plans for nature restoration projects, the Japanese crested ibis (*Nipponia nippon*) returned to the wild, the preservation of the seeds of threatened plants and other project plans. Other three of these items have a rate of progress that has already exceeded 50%. These include the number of regions for which ecosystem preservation and restoration project plans have been formulated, the ratio of surface production eligible for Aquaculture Improvement Plans accounting for seawater culture production, and other project plans (Table 2-5-1). Aside from these, initiatives are being steadily advanced such as by striving for systematic progress in areas like the conservation and creation of seagrass beds and tidal flats, and the removal of sediment from fishing grounds.

Table 2-5-1. Achievement status concerning numerical indicators in the national strategy (partial extract)

Items	Target		Inspection		Initial		Rate of progress
	Target value	Year	Inspection value	Year	Initial value	Year	
Number of implementation plans for nature restoration projects	35	FY2015	35	FY2013	26	End of FY2011	100.0%
The Japanese crested ibis returned to the wild (wild population on Sado-ga-shima, including eastern Kosado)	About 60 birds	Around 2015	98 birds (including 1 on Honshu)	Sept. 2013	50 birds	July 2012	480.0%
Preservation of the seeds of threatened plants	15% of threatened species	By 2020	16.0%	March 2013	12.9%	March 2012	147.6%
	(253 species)		285 species		218 species		191.4%
Number of regions for which ecosystem preservation and restoration project plans have been formulated	9 regions	FY2020	8 regions	FY2013	6 regions	End FY2011	66.7%
Ratio of surface production eligible for Aquaculture Improvement Plans accounting for seawater culture production	90%	By 2022	85%	Jan. 2013	70% range	2010	75.0%

※Degree of progress: the above numbers represent the achievement level toward the targets after the National Biodiversity Strategy of Japan 2012-2020 was developed. [Progress%] = [(review value-initial value)/(target value-initial value)*100(%)]

For the achievement of the Aichi Biodiversity Targets, Japan has established five strategic goals in the same manner as the Aichi Biodiversity Targets suited to the situation in Japan. It has also set up 13 national targets beneath these, as well as key action goals and related indicator groups for each of these national targets, and will determine their achievement status.

In relation to Strategic Goal A (Have a diverse array of actors such as governments, local governments, businesses, private organizations, and citizens recognize the importance of the conservation and sustainable use of biodiversity and autonomously reflect this in their respective actions, thereby responding to the underlying causes for the loss of biodiversity), the Japan Committee for the United Nations Decade on Biodiversity was established with the aims of enhancing and strengthening initiatives to raise public awareness of biodiversity. This is being done with the participation of a diverse array of actors such as experts, the economic community, NPOs and NGOs, local governments, and governments, and its goal is to promote specific actions through the participation and coordination of various sectors for the achievement of the Aichi

Biodiversity Targets. At the regional level the formulation of Regional Biodiversity Strategies has been proceeding apace, and at the same time the number of municipalities participating in municipal biodiversity networks has been on the rise. At the private level the number of organizations participating in the Japan Business and Biodiversity Partnership has been rising, as have examples of initiatives for certification marks. As these and other examples indicate, progress has been made with a variety of initiatives geared towards the "mainstreaming of biodiversity across society."

In relation to Strategic Goal B (Advance initiatives geared towards minimizing human-induced pressures that degrade ecosystems and promote their sustainable use), progress has been made with initiatives geared towards minimizing human-induced pressures that degrade ecosystems. Examples include initiatives for the formation of ecological networks, nature restoration projects, examinations for enhancing measures to protect and manage wildlife, and promoting measures to prevent wildlife damage that take coexistence with wildlife into consideration. Other examples include initiatives aimed at performing ongoing agriculture, fishing, and forestry that ensures the conservation of biodiversity; improving water environments, and initiatives for identifying invasive alien species and preventing damage from them.

In relation to Strategic Goal C (Appropriately conserve and manage ecosystems and halt the extinction and decline of threatened species. Furthermore, achieve and maintain improvements in the conservation status of species which are experiencing particular declines from among those species that are in danger of going extinct. In addition, improve the conditions for biodiversity by conserving the genetic diversity of crops, livestock animals, and wild species that are closely related to them, including those species that are valuable in a socioeconomic or cultural sense), progress has been made with matters like identifying and managing regions that contribute to the conservation of biodiversity, preventing the extinction and decline of threatened species, and the conservation of genetic resources for agricultural production. Examples of this include revising the Red List and moving forward with considerations for policies for selecting rare designated species of wild fauna and flora in Japan.

In relation to Strategic Goal D (Strengthen the benefits obtained from biodiversity and ecosystem services), ongoing considerations of things like methods for determining the conservation and restoration status of ecosystems will be required. However, work has been done to strengthen the benefits obtained from biodiversity and ecosystem services, including their contributions to climate change mitigation and adaptation, through efforts like the *Satoyama* Initiative. Progress has also been made on considering domestic measures for the early conclusion of the Nagoya Protocol on ABS.

In relation to Strategic Goal E (Steadily promote policies based upon the National Biodiversity Strategy of Japan, strengthen the scientific grounds that will serve as a foundation for these, and promote capacity building in the biodiversity field), efforts are being made to steadily promote policies by examining the state of progress of policies based upon the national strategy. In addition, efforts have also been made to strengthen the scientific grounds for these by proactively participating in, contributing to, and setting in place a domestic structure for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Capacity building in the biodiversity field is also being promoted via support through the Global Environment Facility (GEF) and Japan Biodiversity Fund, among others.

Chapter 3. Achievement Status of the Aichi Biodiversity Targets and Its Contribution to the Millennium Development Goals

Question 10. What progress has been made by your country towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?

3.1. Achievement Status of the Aichi Biodiversity Targets

National targets for Japan were established in Part 2 of the National Biodiversity Strategy of Japan 2012-2020 that correspond to the Aichi Biodiversity Targets in September 2012 in order to achieve the Aichi Biodiversity Targets that were adopted at COP10 (see 2.2). Thirteen national targets comprising 5 strategic goals were established, as were 48 key action goals for their achievement. Moreover, 81 related indicator groups were also established in order to evaluate the achievement status of these national targets (see Appendix II). The achievement status of the national targets as of September 2013 was examined based upon the status of initiatives for the key action goals and trends with the related indicator groups. In the below description the Aichi Biodiversity Targets are expressed in shaded cells, while the national targets in the National Biodiversity Strategy of Japan 2012-2020 are expressed in white cells. The related indicator groups show data up through September 2013.

(1) Strategic Goal A

Strategic Goal A	Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
National Strategic Goal: A	Have a diverse array of actors such as governments, local governments, businesses, private organizations, and citizens recognize the importance of the conservation and sustainable use of biodiversity and autonomously reflect this in their respective actions, thereby addressing to the underlying causes for the loss of biodiversity.

Progress is being made with a variety of initiatives geared towards achieving the “mainstreaming of biodiversity across society” in which a diverse array of actors such as governments, local governments, businesses, private organizations, and citizens recognize the importance of the conservation and sustainable use of biodiversity and autonomously reflect this in their respective actions.

(1) Aichi Biodiversity Targets 1-4

Aichi Biodiversity Target 1	By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
Aichi Biodiversity Target 2	By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
Aichi Biodiversity Target 3	By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.
Aichi Biodiversity Target 4	By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.
National Target: A-1	Have a diverse array of actors such as governments, local municipalities, businesses, private organizations and citizens recognize the importance of the conservation and sustainable use of biodiversity and autonomously reflect this in their respective actions, thereby achieving the “mainstreaming of biodiversity across society” and reducing the fundamental causes of biodiversity loss through actions taken by diverse actors, by 2020 at the latest.

With a view towards the mainstreaming of biodiversity across society, initiatives to raise awareness of biodiversity are underway through partnerships between various actors at not only the relevant government ministries and agencies, but also various organizations such as the Japan Committee for the United Nations Decade on Biodiversity. At the regional level the formulation of Regional Biodiversity Strategies are

underway, and other developments have been observed such as an increase in the number of municipalities participating in municipal biodiversity networks (Figure 3-1-1). Furthermore, progress has also been seen at the private level, such as an increase in the number of organizations taking part in the Japan Business and Biodiversity Partnership and the spread of case examples of initiatives for certification marks (Figure 3-1-2, 3-1-3).

Case examples of economic assessments for biodiversity and ecosystem services continue to be accumulated and collected.

But to achieve the targets by 2020 it is not enough to merely boost recognition of the term “biodiversity” (Figure 3-1-4). It is also important to make the importance of the conservation and sustainable use of biodiversity common knowledge throughout society and to mainstream it across society so that people autonomously tie it in to their decision-making and actions. For this reason, there is a need to further promote initiatives to visualize biodiversity and ecosystem services through economic assessments of these, and to reflect these in policies and the decision-making of a diverse array of actors. What is more, the impact on biodiversity from incentives will continue to be taken into consideration.

Figure 3-1-1: Number of municipalities participating in municipal biodiversity networks (left)
Figure 3-1-2: Number of organizations participating in the Japan Business and Biodiversity Partnership (right)

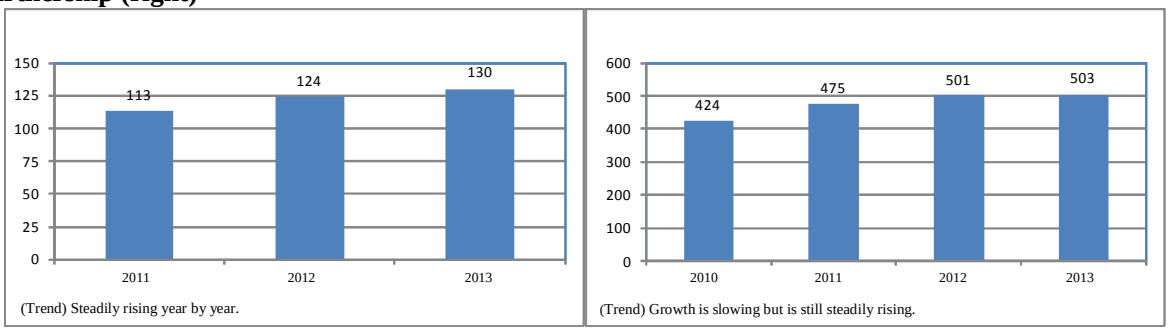
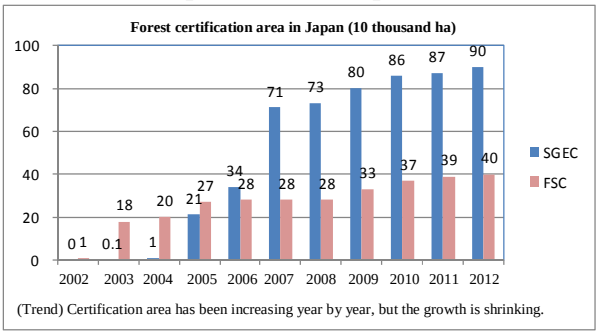
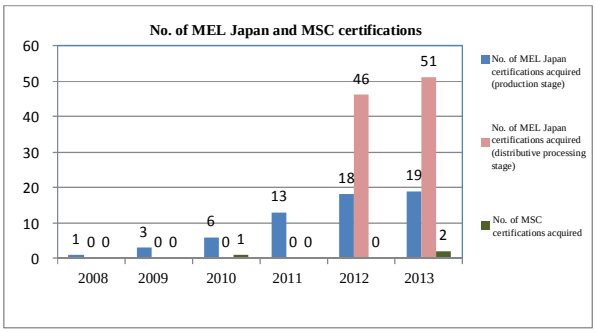


Figure 3-1-3: Number of SGEC, FSC forest certification area, MEL Japan, MSC, and JHEP certifications acquired within Japan





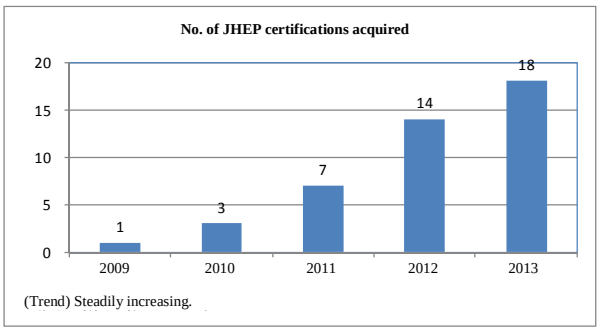
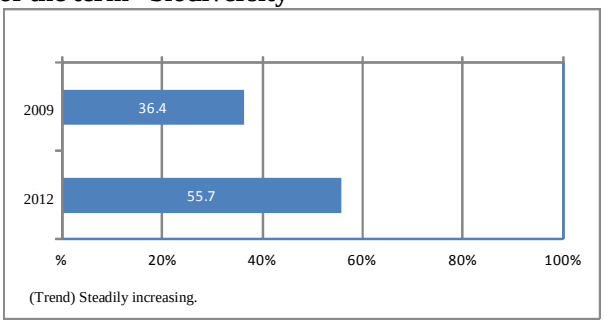


Figure 3-1-4: Recognition of the term "biodiversity"



Key Action Goal A-1-1	Flesh out and enhance publicity, education, and public awareness on biodiversity (MOE, MOFA, MEXT, MAFF, METI, MLIT).

The Japan Committee for the United Nations Decade on Biodiversity (UNDB-J) was established in September 2011 with the participation of a diverse array of actors such as experts, the economic community, NPOs and NGOs, local governments, and governments, and its goal is to promote specific actions through the participation and coordination of various sectors for the achievement of the Aichi Biodiversity Targets. The UNDB-J has held nationwide meetings on biodiversity and local seminars, certified recommended coordination projects, selected recommended books and the like, and instituted the MY Declaration of Action. Through these and other efforts it has been working to flesh-out and enhance initiatives for raising public awareness of biodiversity through partnerships between various actors.

What is more, the relevant ministries have been carrying out publicity activities related to biodiversity by using their homepages, and have been promoting environmental education and social education through hands-on nature programs aimed at parents and children and pupils, such as the Children's Riverside Rediscovery Project and the Seaside Nature Schools. They have also been promoting the setting in place of urban parks and other venues for implementing these programs, as well as school facilities with intention of co-existing with nature.

Information is also provided via the holding of explanatory meetings and contact points for consultations in order to promote access and profit allocations related to biological resources.

Moreover, initiatives that aim to boost public understanding related to biodiversity are also being carried out, such as introducing case examples of the "Ikimono Marks" that indicates that agriculture, forestry, and fisheries products are biodiversity-friendly. Japan will continue to press these initiatives forward with co-operation among various stakeholders.

Key Action Goal A-1-2	Promote initiatives to visualize economic values of biodiversity and ecosystem services (MOE, MAFF, MLIT).

The carrying out, collection, and accumulation of case examples of assessments within Japan are moving forward, such as the trial economic assessments of the biodiversity that was conserved via the designation of Amami Oshima as a national park and the national countermeasures against crop damage from sika deer (*Cervus Nippon*) in FY2012. Moreover, considerations are moving ahead regarding the use of economic assessments for biodiversity and ecosystem services. These include using assessments of economic value to consider the development of mechanisms to encourage companies and others to provide support to agricultural production activities that contribute to the conservation of biodiversity carried out by farmers, and promoting the dissemination of environmental real estate as an initiative for creating real estate markets that encourage sustained investment.

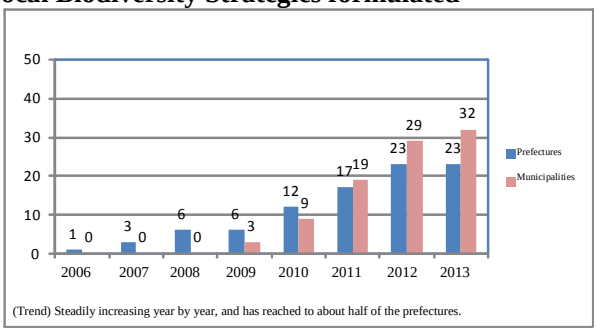
Japan will continue to press forward with these initiatives, and will continue to compile the results from collecting and verifying case examples.

Key Action Goal A-1-3	Promote the formulation of effective Local Biodiversity Strategies and practical initiatives by local municipalities. In addition, revise guidelines on formulating Regional Biodiversity Strategies by 2013 (MOE).

As of FY2013 support had been provided to 27 local municipalities for the formulation of Local Biodiversity Strategies by local governments. Including these municipalities, as of September 2013 Local Biodiversity Strategies had been formulated at 23 prefectures and 32 municipalities (Figure 3-1-5).

The task of revising the Local Biodiversity Strategy Formulation Guidelines has been moving forward towards their completion in FY2013, with the aim being to continue to promote the formulation of regional strategies through the use of said guidelines.

Figure 3-1-5: Number of Local Biodiversity Strategies formulated



Key Action Goal A-1-4	Promote the formulation of strategies and plans by the national and local governments in consideration of biodiversity. In addition, give consideration to the effects on biodiversity from incentive measures and implement incentive measures that take biodiversity into consideration (MOE, MAFF, MLIT).

The Ministry of Agriculture, Forestry and Fisheries Biodiversity Strategy was formulated in February 2012 as a national strategy that incorporated considerations for biodiversity. Agriculture, forestry, and fisheries policies that place a greater emphasis on the conservation of biodiversity are being deployed in a comprehensive manner based on this strategy.

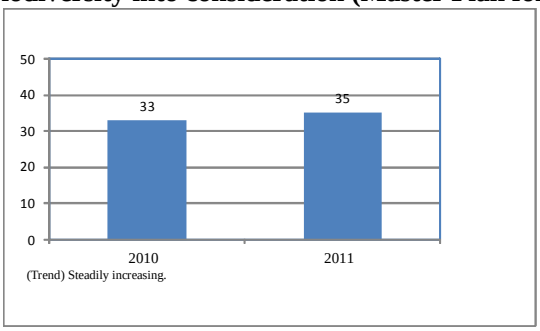
What is more, support is provided to local governments and other entities for the formulation of statutory plans related to the conservation of biodiversity in local regions and the promotion of initiatives based on these plans. As of the end of FY2012, 22 statutory plans (Local Biodiversity Strategies, implementation plans for the extermination of invasive alien species, etc.) had been formulated. For cities, the Technological Considerations in Securing Biodiversity under Master Plan for Greenery was formulated in October 2011 in the interest of supporting the formulation of Master Plan for Greenery by local governments, which gave forethought to securing urban biodiversity. In addition, the City Biodiversity Index (draft) was formulated in May 2013, through which the initiatives of local governments have been promoted.

What is more, support projects promoting the conservation of biodiversity have been offering financial support for biodiversity conservation activities through partnerships by a diverse array of actors in local regions in order to encourage such activities. As of FY2013 support had been provided to the activities of 55 organizations. As for those organizations to which support has concluded, all of the organizations are still continuing with or expanding upon their activities through a variety of different structures to this day.

The impact on biodiversity from incentives is still being taken into consideration.

While some of these initiatives have involved partial revisions to their contents, they will continue to be promoted in an ongoing manner.

Figure 3-1-6: The ratio of the formulation of basic plans on conserving green spaces and promoting greening that take securing biodiversity into consideration (Master Plan for Greenery)



Key Action Goal A-1-5	Establish and announce policies for biodiversity-conscious and sustainable business activities and encourage their implementation (the introduction of environmental management systems which give consideration to biodiversity, the procurement of raw materials which takes into consideration the supply chains, production activities, sale of goods and services, technological development, waste management, investment and financing activities, land use, employee education and information disclosure on these activities) (MOE).

In FY2012 fact-finding surveys of the initiatives by business operators were carried out for the biodiversity field, and together with this case examples of initiatives were collected. These were announced via a homepage, through which efforts were made to further promote initiatives by business operators. For FY2013 the plan is to consider measures to promote initiatives by business operators, continuously determine international trends, and promote the public disclosure of information by means of assessing and analysing the status of initiatives by business operators for each type of industry and setting, as well as the coordination status with municipalities. In order to encourage businesses to take biodiversity-conscious action, co-operation with the UNDB-J and the Japan Business and Biodiversity Partnership will continuously be strengthened.

(2) Strategic Goal B

Strategic Goal B	Reduce the direct pressures on biodiversity and promote sustainable use.
National Strategic Goal: B	Advance initiatives geared towards minimizing human-induced pressures that degrade ecosystems and promote their sustainable use

Initiatives geared towards minimizing human-induced pressures that degrade ecosystems are underway. These include initiatives for the formation of ecological networks, nature restoration projects, examinations for enhancing measures to protect and manage wildlife, and promoting measures to prevent wildlife damage that take coexistence with wildlife into consideration.

However, ongoing examinations are needed with respect to methods to determine the rate of loss of natural habitats and their state of degradation and fragmentation.

(1) Aichi Biodiversity Target 5

Aichi Biodiversity Target 5	By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
National Target: B-1	Significantly reduce the rate of loss of natural habitats, as well as their degradation and fragmentation, by 2020

Progress is being made with initiatives that are conducive to the formation of ecological networks and individual initiatives for things like the restoration of nature. While it is conjectured that the rate of loss of natural habitats is on a downward trajectory, it will be necessary to continue to examine methods to determine this rate and the state of their degradation and fragmentation.

Key Action Goal B-1-1	Establish methods and standard values to serve as baselines designed to determine the rate of loss of natural habitats and their state of degradation and fragmentation, as well as sorting out their current status, so that effective action can be launched by the midterm review of the Aichi Biodiversity Targets that is scheduled for 2014 or early in 2015 (MOE, MAFF).

With regard to methods to determine the rate of loss of natural habitats and their state of degradation and fragmentation, we have decided to measure them according to the area of forests, area of lakes, area of land reclamation and length of natural coastlines, regarding the continuous data availability.

The area of forests has hardly increased nor decreased and the area of lakes has not changed significantly as well. The area of land reclamation which had peaked in 1970's is in declining trend in recent years. The length of natural coastlines is estimated more than 18,000 km. Determination of the rate of loss of natural habitats and their state of degradation and fragmentation shall be continued using these data, with review of the methods undertaken when necessary.

Key Action Goal B-1-2	Reduce the rate of loss of natural habitats by at least half or bring this close to zero in cases where it is possible to do so by 2020. In addition, carry out the initiatives needed to noticeably reduce the degradation and fragmentation of natural habitats, such as the development of ecological networks and the restoration of wetlands and tidal flats (MOE, MAFF, MLIT).

To contribute to the formation of ecological networks, support has been provided for activities to formulate Regional Biodiversity Strategies and to conserve and restore important regions. In addition, support has also been provided for the establishment of urban parks and purchases of land for special green conservation areas by local governments, which have been undertaking the conservation, restoration, creation, and management of green spaces.

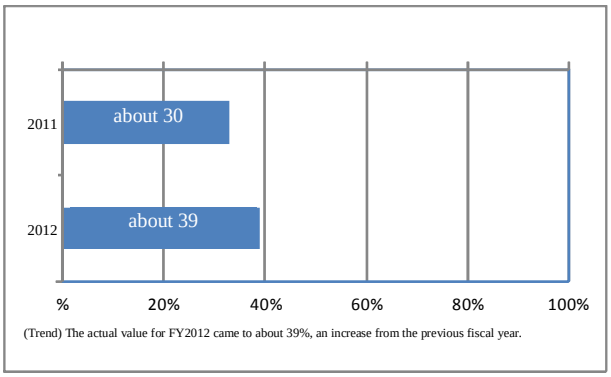
For National Forest, model projects for the improvement and conservation of forests by a diverse array of actors in local regions are being implemented. Furthermore, initiatives are also underway for the conservation and restoration of biodiversity and the formation of ecological networks when it comes to the management of rivers, wetlands, roads, coastal areas, and so forth (Figures 3-1-8, 9, 10, 11).

What is more, as of March 2013 initiatives for nature restoration based on the Law for the Promotion of Nature Restoration were carried out in 24 locations over as much as 480,000 ha. Initiatives for nature restoration were advanced nationwide focusing on a variety of ecosystems, such as forests, wetlands, grasslands, and coral reefs, and initiatives designed to reduce the degradation and fragmentation of natural habitats are being promoted.

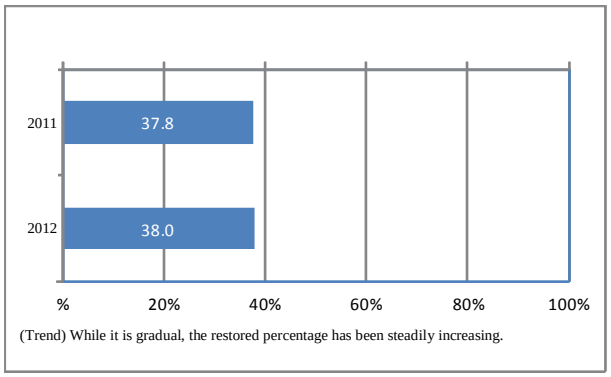
Moreover, support is provided for initiatives to form ecological networks that are being carried out by prefectures.

These initiatives will continue to be promoted, and work will be done to improve the loss of natural habitats, as well as their degradation and fragmentation.

Figure 3-1-8: Percentage of wetlands restored in particularly important water systems (left)
Figure 3-1-9: Percentage of tidal flats restored (right)

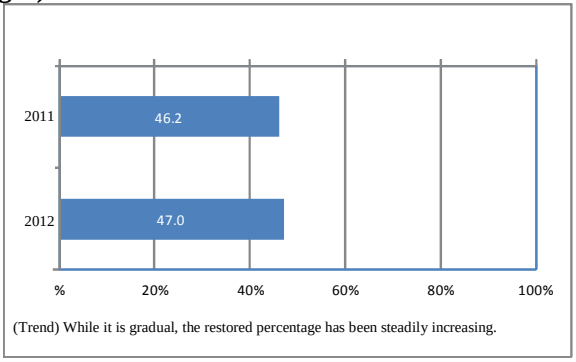


(Trend) The actual value for FY2012 came to about 39%, an increase from the previous fiscal year.

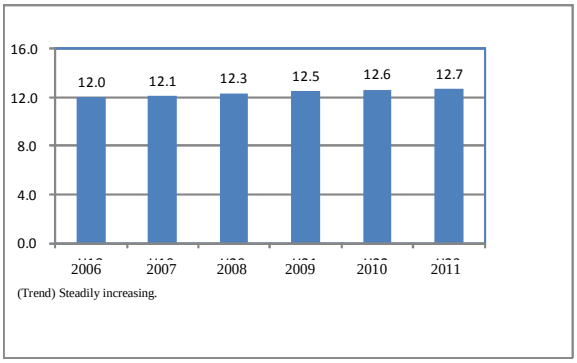


(Trend) While it is gradual, the restored percentage has been steadily increasing.

Figure 3-1-10: Percentage of areas needing improvements to their bottom sediment that were improved at three major ports (left)
Figure 3-1-11: Amount of public space secured for water and greenery in urban areas (m2/person) (right)



(Trend) While it is gradual, the restored percentage has been steadily increasing.



(Trend) Steadily increasing.

Key Action Goal B-1-3	Enhance conservation and management techniques and promote surveys related to survival state in order to soundly implement policies for the conservation and management of wildlife, including population control for wildlife. In addition, overhaul the enforcement status of the Wildlife Protection and Hunting Management Law by 2015 and create arrangements for securing leaders to take charge of conservation and management and begin utilizing these arrangements by 2020 (MOE).

In FY2012 conservation and management review committees were established for each of five specified wildlife species (wild boars (*Sus scrofa*), bears (*Ursus thibetanus japonicas* and *Ursus arctos*), Japanese macaque (*Macaca fuscata*), sika deer (*Cervus nippon*), and great cormorant (*Phalacrocorax carbo*)). These committees compile the latest knowledge on subjects like effective conservation and management techniques, while also promoting examinations of modalities for estimating populations of the sika deer and wild boar and surveying their habitat environments. Moreover, when it comes to overhauling the enforcement status of the Wildlife Protection and Hunting Management Law, questions were presented to the Central Environment Council in FY2012, and examinations of steps that should be taken in order to create a wildlife conservation and management structure are underway.

Key Action Goal B-1-4	Promote initiatives to prevent damage to agricultural crops by wildlife pursuant to the Special Measures Act on Countering Nuisance Wildlife in an integrated manner by aiming for coordination with policies for wildlife conservation and management, including population control. Promote measures to combat damage to forests caused by wildlife widely and effectively, while also moving ahead with countermeasures that take coexistence with wildlife into consideration—such as working to manage and conserve diverse forests—in order to ensure habitat environments for wildlife (MAFF).

Through the Act on Special Measures for Prevention of Damage Related to Agriculture, Forestry and Fisheries Caused by Wildlife comprehensive initiatives to prevent damage from wildlife have been carried out in a region-wide manner based upon the damage prevention plans created by municipalities. Support is also provided to initiatives to control the population of feral wildlife through intensive trapping activities. Moreover, support is also being provided for the installation of barriers in an integrated manner with forest improvements, as well as the setting in place of structures for activities to prevent damage. Comprehensive measures are being instituted for National Forest, such as population control, restoration measures for damaged areas, and the conservation of forests in partnership with a diverse array of actors.

Through such policies the necessary measures that take coexistence with wildlife into consideration will continue to be promoted.

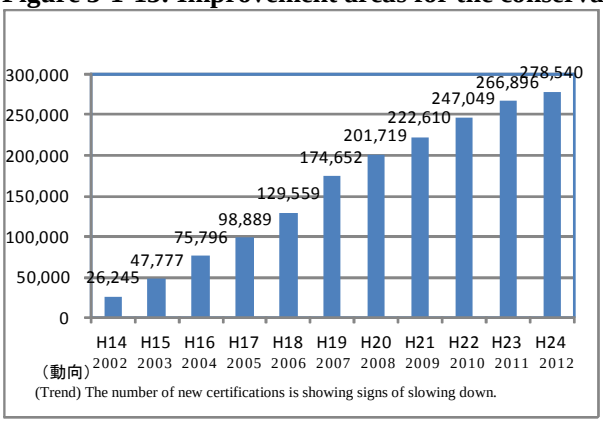
(2) Aichi Biodiversity Targets 6-7

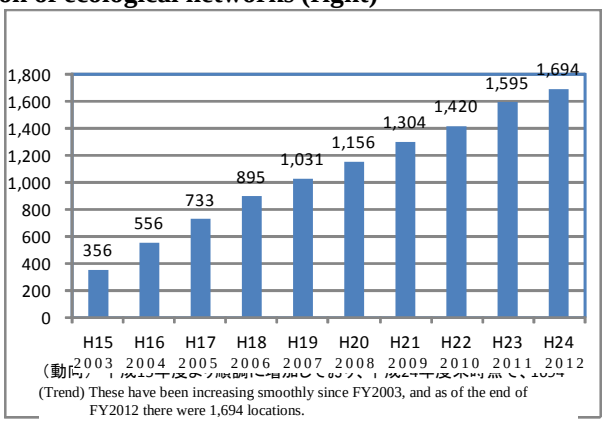
Aichi Biodiversity Target 6	By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
Aichi Biodiversity Target 7	By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
National Target: B-2	Engage in agriculture, forestry, and fisheries that ensure the conservation of biodiversity in a sustainable manner by 2020.

Initiatives are being promoted geared towards carrying out sustainable agriculture, forestry, and fisheries that take the conservation of biodiversity into consideration. These include the promotion of conservation oriented agriculture (environmentally-friendly farming), the maintenance and conservation of diverse and healthy forests, and the establishment of fishing ports and grounds that give forethought to biodiversity.

Steady progress has been seen on a number of fronts, such as the number of eco farmers certified (Figure 3-1-12), improvements for the conservation of ecological networks (Figure 3-1-13), and the ratio of production on water surfaces subject to Aquaculture Improvement Plans that account for seawater culture production.

Figure 3-1-12: Cumulative number of new eco farmer certifications (left)
Figure 3-1-13: Improvement areas for the conservation of ecological networks (right)





Key Action Goal B-2-1	Promote initiatives that seek a balance between production-related activities and the conservation of biodiversity such as sustaining agricultural production and managing production bases that can be operated sustainably (MAFF).

Direct support is offered for the dissemination and entrenchment of norms for agricultural environments, the certification of eco farmers, and conservation oriented agriculture (environmentally-friendly farming) such as organic farming. One example of the results of this is that there has been a rise in the cumulative number of new eco farmer certifications, with this reaching 278,540 certifications as of the end of FY2012.

What is more, initiatives are being promoted that seek a balance between production-related activities and biodiversity by means of setting in place agricultural production bases that take biodiversity into consideration.

These initiatives will continue to be promoted and supported.

Key Action Goal B-2-2	Promote the multiple functional roles of forests, including the conservation of biodiversity, by encouraging management and conservation of diverse and healthy forests, which includes the conservation of biodiversity, based upon forest plans. In addition, move forward with the National Survey on Biodiversity of the Forest Ecosystems (monitoring surveys) that investigate trends in forest biodiversity in line with standards and indicators that has been agreed upon internationally (MAFF).

The maintenance and conservation of forests are promoted based upon matters that should be taken into consideration regarding the biodiversity conservation functions possessed by forests, as well as forestry work for producing forests that contribute to such functions being exercised found in the Basic Plan for Forests and Forestry and the National Forest Plan. For National Forest, careful, detailed work is performed while curtailing the excessive disturbance of forest ecosystems. In addition, the development of diverse forests is promoted by means of converting conifer forests to broadleaf forests, long rotation management, and other measures that are suited to the special characteristics of the site. The third round of the National surveys on diversity in forest ecosystems was carried out starting in FY2010, which determines trends in things like the status of forest ecosystems.

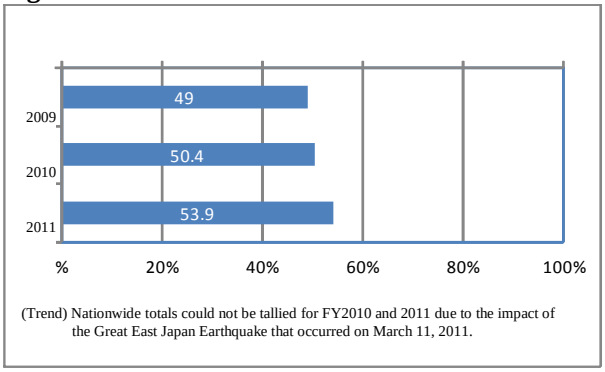
Efforts will continue to be made for the maintenance and conservation of diverse forests through the appropriate work, as well as for utilizing the data obtained from the surveys.

Key Action Goal B-2-3	Promote initiatives that seek a balance between sustainable fisheries and the conservation of biodiversity. This is to be done by promoting the conservation and regeneration of seagrass beds and tidal flats, the construction and maintenance of fishing ports and fishing grounds with forethought given to biodiversity, international cooperation for the sustainable use and management of highly migratory fish (including tuna), resource management under resource management guidelines and resource management plans and systems, promoting breeding with forethought given to biodiversity, and promoting the conservation of sustainable aquaculture production and inland waters (MAFF).

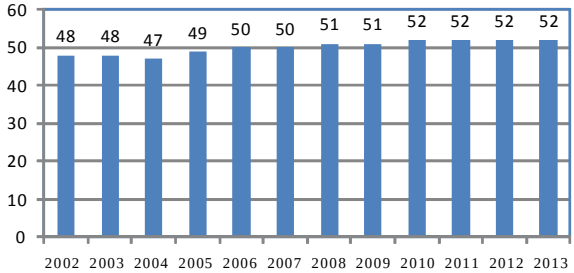
Initiatives that seek a balance between sustainable fisheries and the conservation of biodiversity are being promoted through a variety of different efforts. These include the creation of seagrass beds and tidal flats, the removal of sediment from fishing grounds, the maintenance of fishing grounds based on plans for creating favourable habitat spaces, carrying out wastewater treatment in fishing settlements (Figure 3-1-14), determining trends in marine resources, measures to prevent the by-catch of coastal sea turtles, bilateral and multilateral treaties on fisheries (Figure 3-1-15), the creation of resource management plans (Figure 3-1-16), countermeasures against red tides and anoxic water masses, fisheries eco labels, and measures to prevent damage to fishing from the stellar sea lion (*Eumetopias jubatus*). Other efforts include support for the maintenance of spawning grounds, seedling production facilities, and so on by local people led primarily by fishermen, as well as promoting the formulation of plans to improve independent aquaculture and fishing grounds in local regions (Figure 3-1-17).

Initiatives will continue to be promoted with the aim of utilizing scientific knowledge and raising public awareness in striving for the sustainable use of marine resources.

Figure 3-1-14: Proportion of the population in fishing villages that conduct wastewater treatment in fishing settlements (left)
Figure 3-1-15: Number of multilateral treaties on fisheries (right)

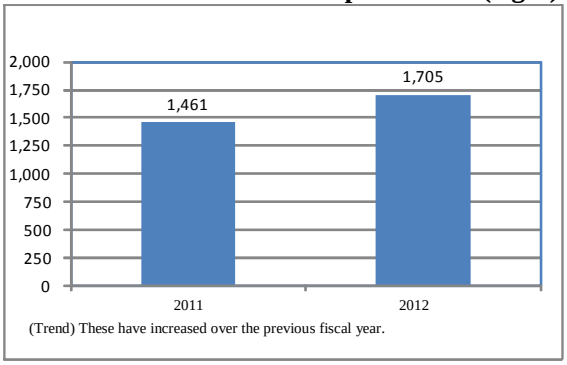


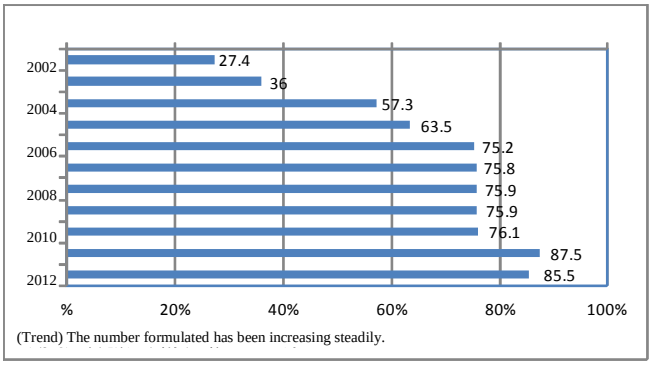
(Trend) Nationwide totals could not be tallied for FY2010 and 2011 due to the impact of the Great East Japan Earthquake that occurred on March 11, 2011.



(Trend) The target has been steadily maintained.

Figure 3-1-16: Number of resource management plans by fishermen and others (left)
Figure 3-1-17: Ratio of production on water surfaces subject to Aquaculture Improvement Plans that account for seawater culture production (right)





Key Action Goal B-2-4	Implement initiatives to create Satoumi areas by means of making appropriate human interventions while living in harmony with nature (MOE).

Guidelines on developing Satoumi areas and information on practical case examples from around Japan are provided via the "Satoumi Net" website in order to support the creation of Satoumi areas full of nature's bounty in which a diversity of fish and shellfish live and from which people can enjoy their benefits on into the future.

Moreover, the Miyako Port Satoumi Restoration Plan, which consists primarily of regenerating eel grass beds, was formulated in FY2012 with a focus on Miyako Port in Iwate Prefecture. A decision was made to formulate the Guidelines on Formulating Satoumi Restoration Plans, which compile know-how on Satoumi restoration, in FY2013.

(3) Aichi Biodiversity Target 8

Aichi Biodiversity Target 8	By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
National Target: B-3	Maintain the water quality and habitat environments desirable for the conservation of aquaticorganisms, increasing biological productivity, and sustainable use while continuing to improve the state of contamination from nitrogen and phosphorous by 2020. When it comes to water areas with a highly closed off nature—such as lakes, and deeply indented bays—(hereinafter referred to as "closed water areas") in particular, promote policies in mountainous areas, agricultural villages and the outskirts of urban areas, and urban areas that focus on the river basin in their entirety based upon the unique characteristics of each of these regions in a comprehensive and prioritized manner.

A variety of different measures designed to improve water environments are being promoted based upon the Water Pollution Control Act and so forth. Initiatives to improve the water quality and outbreaks of anoxic water masses are carried out for marine areas from among the closed water areas in particular based upon the unique characteristics of the regions. Examples of these include the promotion of various measures such as reducing the pollutant load based upon the 7th Total Pollutant Load Control scheme.

As a result, high levels have been maintained for the achievement status for various different environmental standards for water quality (Figures 3-1-18, 19, 20, 21), with the exception of some lakes/marshes and other areas.

Figure 3-1-18: Achievement status for environmental standards for water quality in rivers, lakes/marshes, and marine areas

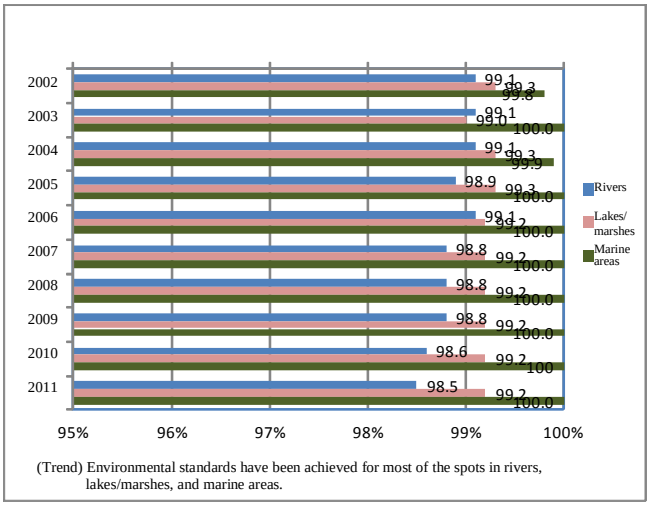
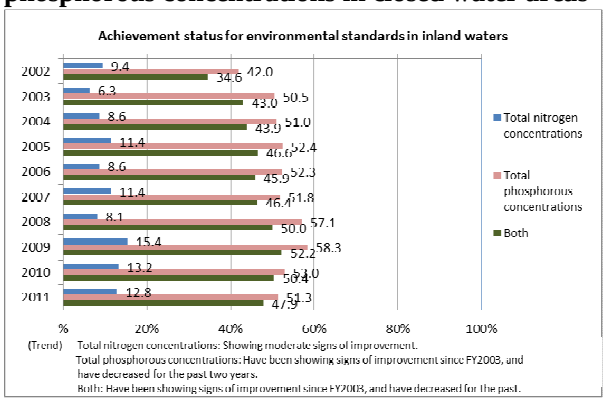


Figure 3-1-19: Achievement status for environmental standards for total nitrogen and total phosphorous concentrations in closed water areas



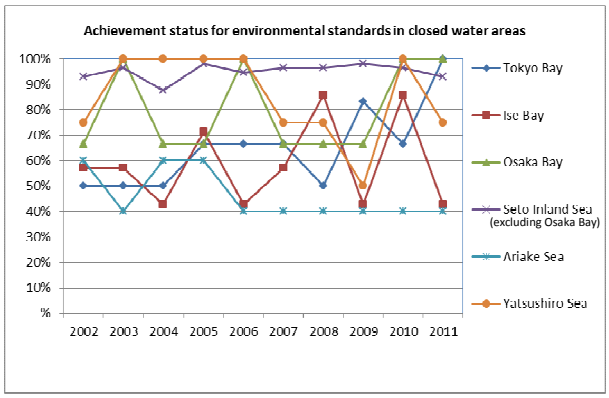
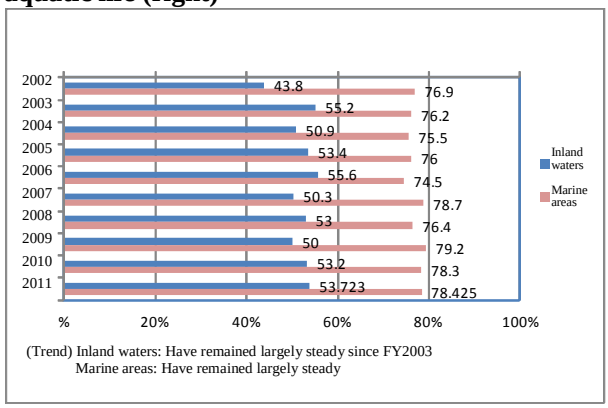
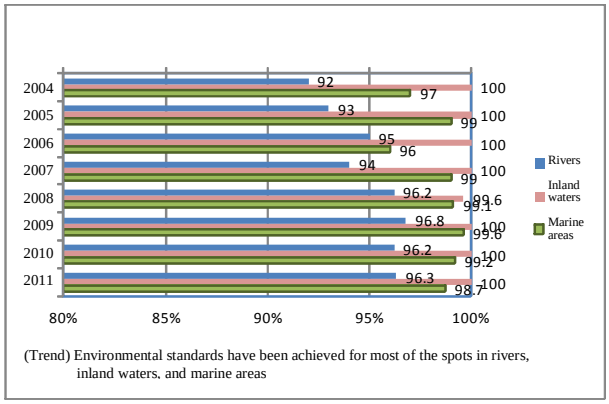


Figure 3-1-20: Achievement status for environmental standards for COD in closed water areas (left)
Figure 3-1-21: Achievement status for environmental standards pertaining to the conservation of aquatic life (right)





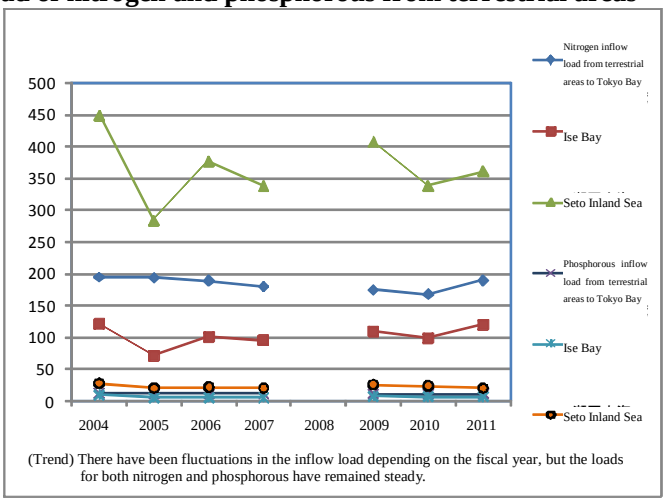
Key Action Goal B-3-1	Reduce nutrient and organic pollutants from river basin while implementing the 7th Total Pollutant Load Control by March 2015 (MOE, MAFF, MLIT).

The 7th Total Pollutant Load Control scheme, which has FY2014 as its target fiscal year, set targets for the reduction of the pollutant load in each designated water area and has been instituting countermeasures for each source of discharge, whether it be domestic or industrial. Each fiscal year surveys are carried out on factors like the water quality in each designated water area to determine the state of the water environment in marine areas, by means of which the reductions of pollutant loads, the effects of water quality improvements, and so on are determined. As a result, reductions in the pollutant loads in each of the designated water areas have been proceeding in series (Figure 3-1-22). Moreover, examinations to find how future Total Pollutant Load Control schemes should be structured began in FY2013.

In addition, efforts are being made to reduce the inflow load of nutrient salts and organic pollutants from river basin areas via a number of measures. These include setting in place agricultural drainage facilities and water quality preservation facilities, the standardization of management for livestock excreta, and advanced treatment and measures to improve combined sewer systems at wastewater treatment facilities.

Initiatives to improve water quality will continue to be promoted, together with examinations of how future Total Pollutant Load Control schemes should be structured.

Figure 3-1-22: Inflow load of nitrogen and phosphorous from terrestrial areas



(Trend) There have been fluctuations in the inflow load depending on the fiscal year, but the loads for both nitrogen and phosphorous have remained steady.

Key Action Goal B-3-2	Carry out initiatives designed to improve the water quality and occurrences of anoxic water masses in closed water areas. In addition, examine environmental standardization with respect to bottom-layer dissolved oxygen for the conservation of aquatic organisms and transparency for the conservation of aquatic plants by 2014 (MOE, MLIT).

Initiatives designed to improve the water quality and outbreaks of anoxic water masses in closed water areas are being carried out pursuant to the 7th Total Pollutant Load Control scheme.

Initiatives are being promoted for the conservation and regeneration of biodiversity in coastal regions. This is being done by instituting measures such as the conservation, restoration, and creation of tidal flats, shallow bottoms, and so forth in closed water areas through the effective use of dredged sand and the like, as well as the backfilling of vestiges of deep digging.

What is more, surveys and examinations are being implemented for the setting of environmental standards for bottom-layer dissolved oxygen (bottom-layer DO) concentrated in bottom layers for the conservation of marine organisms and for transparency for the conservation of aquatic plants.

Key Action Goal B-3-3	Carry out investigations and studies aimed at establishing management policies in order to balance the conservation of habitats for a diverse array of marine organismshigh biological productivity, as well as maintaining desirable habitat environments with respect to sustainable use (MOE).

In FY2012 surveys and demonstration tests were carried out to elucidate the circulation of nutrient salts and the primary causes for the stagnation of the smooth circulation of said salts with a focus on model regions (Mikawa Bay in Aichi Prefecture and north-eastern Harimanada in Hyogo Prefecture). Plans for Achieving a Sound Material Cycle in Marine Areas (Healthy Plans) were formulated, as were Guidelines for the Formulation of Healthy Plans to encourage the formulation of plans for other regions.

Moreover, in FY2013 a Healthy Plan was formulated for another model region (Mitsu Bay in Hiroshima Prefecture), and consideration was given to revising the Guidelines for the Formulation of Healthy Plans. In addition, the unique regional environmental characteristics for both the bays and open seas in the Seto Inland Sea were determined, and surveys and examinations on developing techniques for finely tuned water quality management were carried out.

Ongoing efforts to improve water environments will be undertaken, and considerations will continue to be carried out on techniques for finely tuned water quality management.

(4) Aichi Biodiversity Target 9

Aichi Biodiversity Target 9	By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
National Target: B-4	Identify invasive alien species and organize information pertaining to the routes by which they establish themselves based upon the results of examinations of the enforcement status for the Invasive Alien Species Act by 2020. In addition, lay out the order of priority for eradicating these invasive alien species, and on the basis of this apportion out appropriate roles to each of the major actors regarding their eradication and proceed with eradicating them in a systematic manner. Promote a restoration of the habitation status of rare species and restore ecosystems to their original state by controlling or exterminating high priority species through such efforts. What is more, call the attention of related actors to the management of the routes by which invasive alien species become established in order to prevent their introduction or establishment, and promote countermeasures by examining more effective border control measures.

With a view towards achieving this target, the identification of invasive alien species and initiatives to prevent damage from them are being promoted in a systematic manner, such as through the creation of a list of invasive alien species threatening biodiversity, human health and or economic development in Japan (tentative name) and moving forward with the formulation of the Action Plan to Prevent Damages and Risks caused by Alien Species in Japan (tentative name). Furthermore, projects to eradicate invasive alien species such as the mongoose (*Herpestes auropunctatus*) and the green anole (*Anolis carolinensis*) are being carried out in an ongoing manner primarily in regions where it is important for the conservation of biodiversity. As a result, on Amami–Oshima Island and in the Yanbaru area on Okinawa Island results have been observed such as the number of mongoose captured per unit effort has been on a downward trend, owing to which the habitats for the Amami rabbit (*Pentalagus furnessi*) and Okinawa rail (*Gallirallus okinawae*) have shown signs of recovery. Moreover, initiatives for controlling alien species have been conducted by local governments and private organizations. At Izu-numa and Uchi-numa, there is an example of initiatives with good results such as to control the population of the largemouth bass (*Micropterus salmoides*), with the support of the Ministry of the Environment. Constant progress is also seen in the enactment of local regulations and on making the local list of the alien species such as the blue list in Hokkaido.

However, initiatives geared towards minimizing human-induced pressures that degrade ecosystems that are vulnerable to climate change must be strengthened in order to maintain the soundness and functionality of these ecosystems.

Key Action Goal B-4-1	Create a list of invasive alien species threatening biodiversity, human health and or economy development in Japan (tentative name) and organize information pertaining to the routes by which species on the list establish themselves by 2014 (MOE, MAFF).

As of September 2013, 107 species had been designated as the Invasive Alien Species based upon the Invasive Alien Species Act (Figure 3-1-23). In order to create a list of invasive alien species threatening biodiversity, human health and or economic development in Japan (tentative name) by 2014, tasks are being promoted such as holding examinations and hearing the opinions of the concerned parties at the Council to Create the Invasive Alien Species List for the Achievement of the Aichi Biodiversity Targets, which is

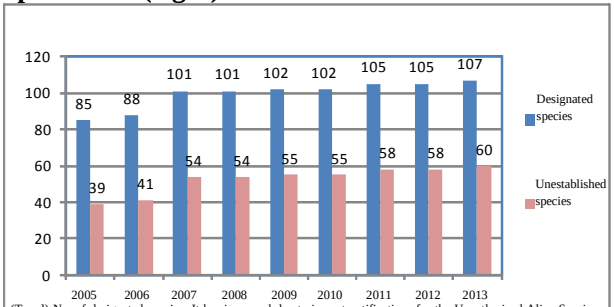
comprised of experts and held through the coordination of the relevant government ministries. Regarding listed species, information on the establishment status and the routes by which they become established will be examined. Also, for the Invasive Alien Species that seem to be brought in repeatedly and unintentionally, more concrete measures will be considered including calling for co-operation to the related industries and the like, and making endeavours to grasp the routes by which they are introduced at the production stage overseas and the distribution stages.

Key Action Goal B-4-2	Arrange the thinking behind the order of priority for controlling alien species and promote efforts such as their systematic eradication by 2014. In addition, formulate "an action plan to prevent damages and risks caused by alien species in Japan (tentative name)" in order to encourage action on countermeasures against alien species and voluntary initiatives at the regional level by the various actors (MOE, MAFF, MLIT).

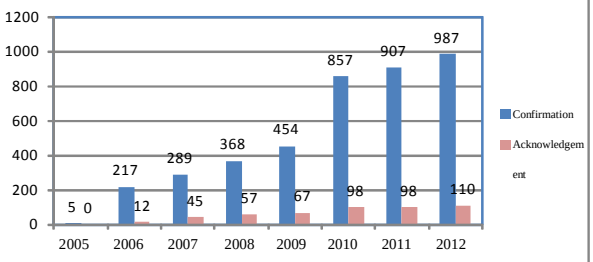
As of November 2012, 983 cases of eradication confirmation and 110 cases of eradication acknowledgement had been carried out pursuant to the Invasive Alien Species Act (Figure 3-1-24).

Moreover, in order to formulate the Action Plan to Prevent Damages and Risks caused by Alien Species in Japan (tentative name) by FY2014, tasks are being promoted such as holding examinations and hearing the opinions of the concerned parties at the Council to Formulate the Action Plan to Prevent Damage from Invasive Alien Species, which is comprised of experts and held through the coordination of the relevant government ministries.

Figure 3-1-23: The number of the Invasive Alien Species and the species listed on the list of invasive alien species threatening biodiversity, human health and or economy development in Japan (tentative name), and the number of unestablished species among these (left)
Figure 3-1-24: Number of cases of confirmation or acknowledgement pursuant to the Invasive Alien Species Act (right)



(Trend) No. of designated species: It has increased due to import notifications for the Unauthorized Alien Species. Additional designations are expected in light of future revisions to the Invasive Alien Species Act and the creation of the list of invasive alien species threatening biodiversity, human health and or economy development in Japan (tentative name). No. of unestablished species: The percentage of unestablished species among the invasive alien species has held largely steady since 2007 (most of the additional designations have been based on import notifications for the Uncategorized Alien Species, and so most of the additional designations have been for unestablished species).



(Trend) The distribution of Invasive Alien Species has been spreading, and together with this a certain measure of initiatives have been observed on account of the enactment of the Invasive Alien Species Act, so these have been on an upward trajectory.

Key Action Goal B-4-3	Control or eradicate high priority invasive alien species, while also restoring the habitation status of rare species, and restoring ecosystems to their original state through such efforts (MOE, MAFF).

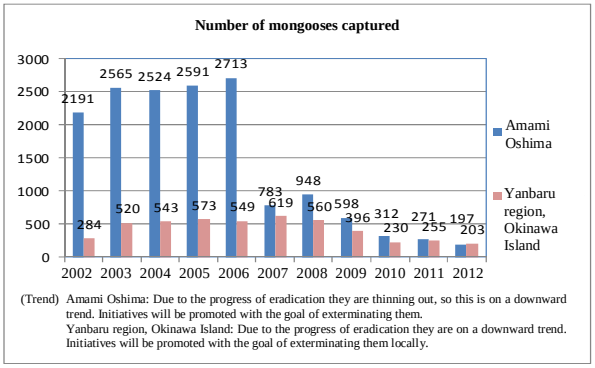
Projects to eradicate invasive alien species such as mongooses (*Herpestes auropunctatus*) and green anoles (*Anolis carolinensis*) are being carried out primarily in regions that are important for the conservation of biodiversity, such as the habitats of rare species and national parks. Moreover, considerations over matters like eradication techniques and the creation of manuals for these are being undertaken for raccoons (*Procyon lotor*) and other Invasive Alien Species that are distributed over extensive regions. In addition, support is also being provided for the eradications carried out by local governments and the like. This is being provided through the formulation of implementation plans for the eradication of Invasive Alien Species, support for demonstration projects (five as of 2013), support for measures to eradicate Invasive Alien Species (21 organizations as of FY2013), and more.

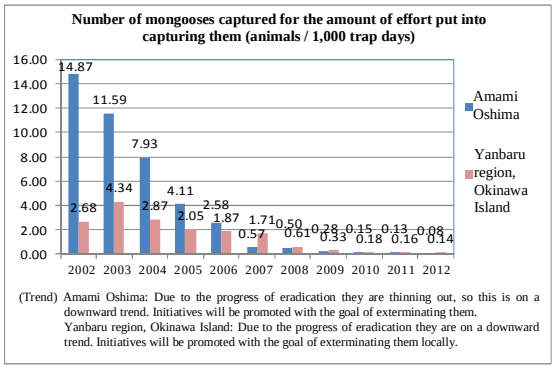
One example of the results of such initiatives is that the number of mongooses captured per unit effort put into capturing them has been on a downward trend on Amami-Oshima and the Yanbaru area on Okinawa

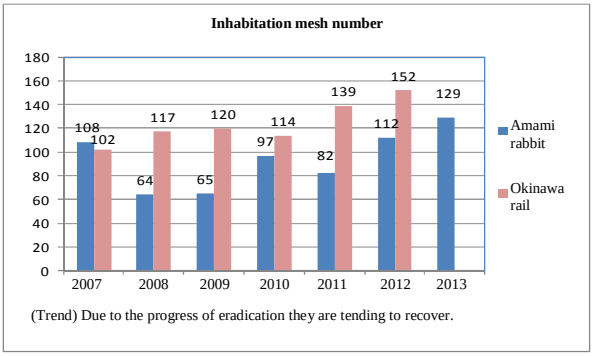
Island. Consequently, the habitats of Amami rabbits (*Pentalagus furnessi*) and Okinawa rails (*Gallirallus okinawae*) are on an upward trajectory (Figure 3-1-25). What is more, phase two of an eradication implementation plan was initiated starting in FY2013 with the goal of completely eradicating the mongoose by FY2022.

Effective eradication will continue to be promoted while working to revise the contents of the support schemes.

Figure 3-1-25: Number of mongooses captured, number captured per unit effort put into capturing them, and the habitation status (inhabitation mesh number) of Amami rabbits and Okinawa rails on Amami-Oshima Island and the Yanbaru area on Okinawa Island (within the region where eradication was carried out (as of FY2012))







(5) Aichi Biodiversity Target 10

Aichi Biodiversity Target 10	By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.
National Target: B-5	Promote initiatives for minimizing human-induced pressures that cause ecosystems to deteriorate in order to maintain the soundness and functionality of ecosystems that are vulnerable to climate change, such as coral reefs, seagrass beds, tidal flats, islands, alpine and subalpine areas by 2015.

When it comes to coral reefs, progress is being made on identifying human-induced pressures such as pollutant loads from terrestrial areas. However, progress must be made on initiatives geared towards minimizing human-induced pressures on seagrass beds, tidal flats, islands, and subalpine and alpine regions—which are illustrative of ecosystems that are vulnerable to climate change.

Key Action Goal B-5-1	Identify human-induced pressures on Japanese ecosystems that are vulnerable to climate change, such as coral reefs, seagrass beds, tidal flats, islands, alpine and subalpine areas by 2013, define the ecologically acceptable values for these human-induced pressures by 2015, and institute initiatives for achieving these ecologically acceptable values (MOE).

With regard to coral reefs, a follow-up committee to the Implementation Plan for the Conservation of Coral Reef Ecosystems that was formulated in FY2010 compiled together the existing information on human-induced pressures placed on coral. In addition, a working group on terrestrial measures from the nature restoration committee for Sekisei Lagoon in Okinawa Prefecture has been moving ahead with examining measures to reduce the pollutant load from terrestrial areas.

Furthermore, examinations related to the impact from climate change on Japan and risk assessments thereof are being advanced with a view towards formulating a climate change adaptation plan in FY2015. Examinations when it comes to identifying human-induced pressures on and setting ecologically acceptable values for vulnerable ecosystems other than coral reefs must also be promoted in conjunction with this.

(3) Strategic Goal C

Strategic Goal C	Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
Target in the national strategy: C	Appropriately conserve and manage ecosystems and halt the extinction and the population decrease of threatened species. Furthermore, achieve and maintain improvements in the conservation status of species which are experiencing particular declines from among those threatened species. In addition, improve the conditions for biodiversity by conserving the genetic diversity of crops, livestock animals, and wild species that are closely related to them, including those species that are valuable in a socioeconomic or cultural sense.

Initiatives to improve the status of biodiversity are being promoted in a comprehensive manner. These include the designation of areas that are conducive to the conservation of biodiversity, such as natural parks and Wildlife Protection Areas, the designation of rare designated species of wild fauna and flora in Japan, preventing the extinction and decline of threatened species by implementing Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations, and the conservation of agrobiological genetic resources via a gene bank project for agricultural biological resources.

(1) Aichi Biodiversity Target 11

Aichi Biodiversity Target 11	By 2020, at least 17% of terrestrial and inland water areas, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.
National Target: C-1	Appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas, by 2020.

The designation of areas that are conducive for the conservation of biodiversity pursuant to laws and ordinances is proceeding apace, with these including natural parks, Wildlife Protection Areas, and Protected Forests and Green Corridors on National Forest, and as such these designated areas have been on an upward trajectory.

As a result, about 20.3% of the terrestrial areas and inland water areas and about 8.3% of the coastal areas and marine areas are being conserved and managed as protected areas.

In order to achieve the targets, it will be necessary to move forward with identifying and managing regions as well as data collection for the ongoing conservation of important regions based upon the thinking behind ecological networks and the selection of important marine areas.

Key Action Goal C-1-1	Set in place methods and baselines for determining the status of conservation and management, as well as their present status, by the midterm review for the Aichi Biodiversity Targets which are scheduled to be held in 2014 or early in 2015 (MOE, MAFF).

For Terrestrial and inland water areas, areas where are conserved and managed as natural parks, nature conservation areas, Wildlife Protection Areas, natural habitat conservation areas, Protected Forests, Green Corridors and others, and those excepted their duplication areas, where GIS data has been confirmed, comes to about 76,800km2. The proportion of those protected area compared to Japanese total land area is about 20.3%.

For coastal areas and marine areas, in May 2011 the Headquarters for Ocean Policy accepted the Modalities for Establishing Marine Protected Areas in Japan, which organizes Japan's thinking when it comes to marine protected areas. Natural parks, nature conservation areas, Wildlife Protection Areas, protected water surfaces, common fishery rights areas, designated sea areas, coastline marine resource development areas, and so on are among the areas that fall under the category of marine protected areas in Japan. Their area comes to 369,200 km2, and they have been set in place over a proportion of area that is 8.3% of the country's closed sea and EEZ.

Key Action Goal C-1-2	Move ahead with examinations on identifying regions that contribute to the conservation of biodiversity by giving consideration to their continuity with surrounding areas, while also promoting their appropriate conservation and management (MOE, MEXT, MAFF, MLIT).

In regards to the national parks and quasi-national parks based on the National Parks Law, examinations and coordination is being promoted based upon the results of a project to overhaul national and quasi-national parks that was announced in October 2010. In May 2013 Sanriku Fukko (Reconstruction) National Park was designated (as an extension of Rikuchu Kaigan National Park), and efforts aimed at newly designating the Kerama Islands as a national park moved forward throughout FY2013. Moreover, for the wilderness areas and nature conservation areas that are based on the Nature Conservation Law, surveys and coordination with local concerned parties aimed at extending their area are being carried out.

Furthermore, five places were designated as places of natural scenic beauty and similarly 20 were designated as natural monuments based on the Act on Protection of Cultural Properties over two years up through September 2013. Support is being provided through the formulation of plans for the preservation and management of historic and other landmarks by local governments, as well as subsidized projects to preserve and maintain them.

For National Forest, Protected Forests on which strict conservation and management are carried out are established for primeval forest ecosystems and forests inhabited by rare wild fauna and flora, as are Green Corridors that serve as migration routes of wild fauna and flora. Efforts are made to conduct appropriate conservation and management through monitoring surveys on forests and animals, while the conservation and management of vegetation and revises of the regions are also carried out.

For urban areas the designation of Special Green Conservation Areas based on the Urban Green Space Conservation Act are proceeding apace, as are designations of Suburban Special Green Conservation Areas based on the Law for the Conservation of Green Belts around the National Capital Region. The designation of districts that contribute to ensuring biodiversity, as well as their appropriate conservation and management, are also being promoted.

Moreover, for marine protected areas case examples from within Japan and overseas are studied when it comes to the results of resource management techniques, and public awareness is raised towards the diffusion of Japanese-style marine protected areas.

Such initiatives will continue to be promoted, as will conservation and management.

Key Action Goal C-1-3	Deepen examinations of the planning and implementation methods for ecological networks and move forward with setting in place conditions for formulating plans and implementing projects at various different spatial levels. In addition, examine policies for ecological networks at the wide-area level and move ahead with forming these (MOE, MAFF, MLIT).

Japan has been providing support for the formulation of implementation plans for nature restoration projects based on the Law for the Promotion of Nature Restoration, as well as demonstration projects (two projects as of FY2013) to local governments. It has also been providing support for measures on priority biodiversity areas (21 cases as of FY2013), all in order to conserve and restore priority areas that are crucial to ecological networks in local regions. Moreover, for National Forest, Green Corridors are established, which form ecological networks that are based primarily around Protected Forests. In addition, for forests that are combined with mountain streams and the like, efforts are made to form more finely tuned forest ecological networks by means of ensuring their continuity.

For cities, the conservation, restoration, creation, and management of green spaces is promoted through the establishment of urban parks and the designation of Special Green Conservation Areas (Figure 3-1-11).

For rivers, the conservation and creation of the habitats and breeding environments for living creatures that rivers inherently possess are promoted, as well as initiatives to form ecological networks in partnership with a diverse array of actors in the local region.

Such initiatives will continue to be promoted and examining policies for and the formation of ecological networks at the wide-area level will be promoted.

Key Action Goal C-1-4	Select regions that are important from the perspective of biodiversity by focusing on regions that are important when it comes to wildlife habitats and breeding and examine the need and methods for their conservation by 2014. This is to be done in order to contribute to promoting the enhancement of marine protected areas and their formation into a network (MOE).

From FY2011-2013 the task of selecting marine priority areas (important marine areas) from the perspective of biodiversity was carried out. After the selection of these important marine areas the plan is to examine their risk factors and consider the necessity of and methods for conservation measures.

(2) Aichi Biodiversity Target 12 – 13

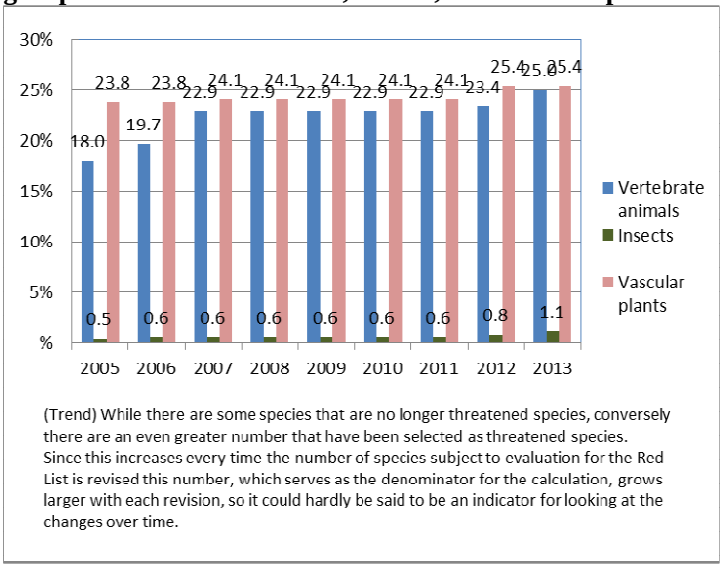
Aichi Biodiversity Target 12	By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.
Aichi Biodiversity Target 13	By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.
National Target: C-2	Maintain a situation in the 2012 version of the Ministry of the Environment's Red List in which no new extinct species (EX) appear (excluding species that are not found over an extended period of time for which a determination will be made over a span of 50 years or more) among the threatened species that are already known about, as well as preventing the population decrease for the known threatened species. For threatened IA species (CR) or threatened I species (CR + EN), which are the species in the greatest danger of going extinct, increase the number of species that will see their rank fall through a variety of initiatives compared to the Ministry of the Environment's 2012 Red List by 2020. Such initiatives include setting in place habitat bases by means of promoting sustainable agriculture, forestry, and fisheries that take the proactive conservation of species and biodiversity into consideration. In addition, maintain the genetic diversity of crops, livestock animals, and wild species that are closely related to them, including those species that are valuable in a socioeconomic or cultural sense, by 2020.

Japan is moving forward with revising the Ministry of the Environment's Red List and examining its policy for selecting national endangered species of wild fauna and flora with a view towards achieving the target. It is also promoting a variety of different initiatives for threatened species, such as formulating Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations and reintroducing individual animals that were bred in captivity into the wild. In addition, the collection and preservation of genetic resources are being promoted via a gene bank project for agricultural biological resources.

Key Action Goal C-2-1	Move forward with creating structures for collecting knowledge that is crucial for promoting the conservation of threatened species (current state of threatened species' habitats, reasons for their decline, conservation status, conservation methods and techniques, etc.), sharing information among the various actors, and using this by 2020. In addition, organize Red Lists that accurately reflect the status of threatened species and revise these periodically (MOE).

The Fourth Red List (land-based organisms) was released in FY2012, and considerations have begun towards revising it for the next term roughly five years down the road. Considerations are also moving ahead for a Red List for marine organisms with the aim being to release it in FY2016 (Figure 3-1-26).

Figure 3-1-26: Percentage of threatened species among the number of species subject to evaluation across the taxonomic groups of vertebrate animals, insects, and vascular plants



Key Action Goal C-2-2	Assign priority starting with species for which there is a particularly high risk of extinction and for which good results from countermeasures can be expected through regulations, and then steadily promote the designation of National Endangered Species of Wild Fauna and Flora based upon the Law for the Conservation of Endangered Species of Wild Fauna and Flora by 2020. Promote initiatives for The Conservation Programmes defined by the law through the formulation of plans for such programs pursuant to this act, while also striving to improve the conservation methods and techniques in accordance with the unique characteristics of each respective species and taxa (MOE, MEXT, MAFF, MLIT).

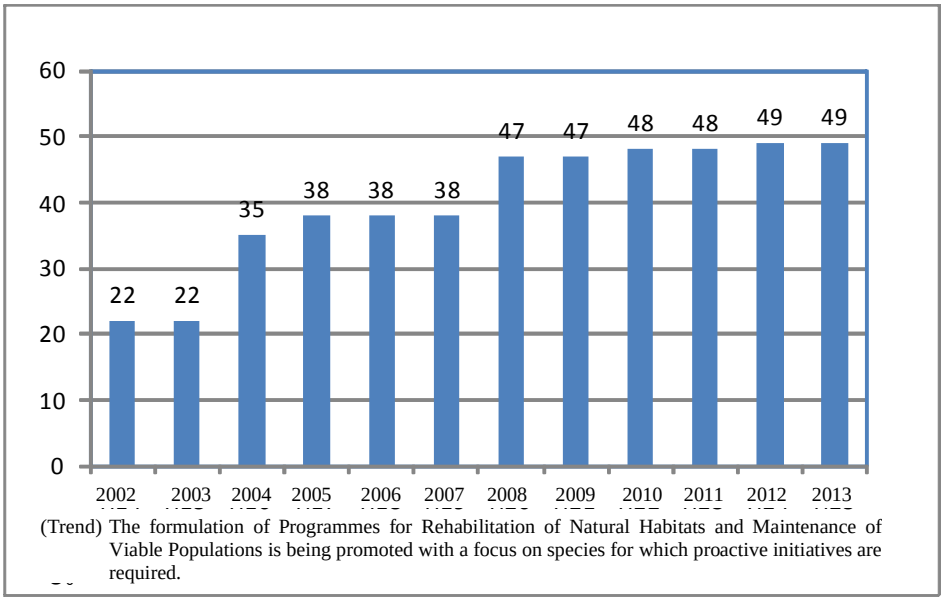
The Conservation Strategy for Threatened Wild Organisms that is currently being prepared organizes the thinking behind the priority of species for addressing conservation. It also aims to newly designate 300 additional species of national endangered species of wild fauna and flora by 2020.

At present Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations have been formulated for 49 national endangered species of wild fauna and flora, including one for the ptarmigan (*Lagopus mutus japonicus*) that was newly formulated in FY2012 (Figure 3-1-27). Such Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations are being deployed nationwide based upon this plan. This includes efforts such as designating national monuments, tours to inspect the national endangered species of wild fauna and flora on National Forest, and instituting projects for the maintenance and improvement of habitat environments.

What is more, in June 2013 the Act on Conservation of Endangered Species of Wild Fauna and Flora was revised with a view towards the smooth implementation of these Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations. Support has also been provided for the formulation of such programmes by local governments (two cases as of FY2013).

Projects that are crucial for the protection and management of rare species of wild fauna and flora will continue to be promoted, and consideration will be given to modalities for the conservation and sustainable use of rare marine resources.

Figure 3-1-27: Number of Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations that have been formulated



(Trend) The formulation of Programmes for Rehabilitation of Natural Habitats and Maintenance of Viable Populations is being promoted with a focus on species for which proactive initiatives are required.

Key Action Goal C-2-3	Promote the development of habitats by aiming to build consensus among local regions for preventing the extinction or decline of threatened species (MAFF).

For National Forest, the improvement and conservation of diverse forests is carried out through such means as systematic thinning so as to allow forests to adequately exhibit their multifunctionality, which includes the conservation of biodiversity.

What is more, the maintenance and improvement of habitat environments for national endangered species of wild fauna and flora on National Forest are being implemented as a Programme for Rehabilitation of Natural Habitats and Maintenance of Viable Populations pursuant to the Act on the Conservation of Species.

Key Action Goal C-2-4	Work to address ex-situ conservation for those species such as the Japanese crested ibis (*Nipponia nippon*) and the Tsushima leopard cat (*Felis bengalensis euptilura*) that are believed to be at an extremely high risk of extinction and for which their survival will remain in jeopardy if only initiatives for in-situ conservation are carried out, by 2020. The aim will be to restore ecosystems and revitalize regional communities by promoting the return to wildlife of individual animals that were propagated through artificial breeding through such initiatives (MOE, MEXT, MAFF, MLIT).

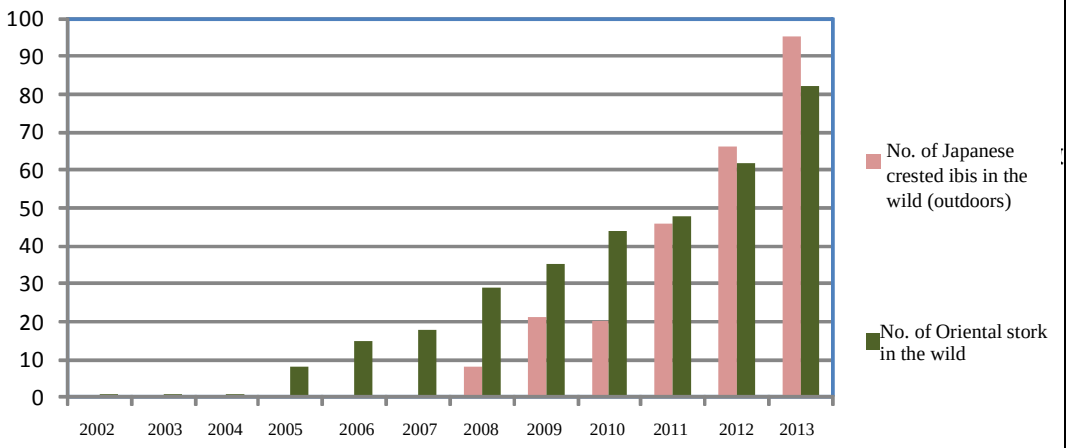
Progress has been made with breeding the Japanese crested ibis (*Nipponia nippon*) in captivity outside of its five habitats on Sado-ga-shima in Niigata Prefecture and other places, and so the number of birds has been rising steadily. On Sado-ga-shima improvements in their living environment have been promoted and birds bred in captivity have been released. As a result, the number of birds in the wild had risen to 98 (including one on Honshu) as of the end of September 2013, and now young chicks are being born through natural breeding out in the wild.

As for the Tsushima leopard cat (*Felis bengalensis euptilura*), efforts are being made to rear and breed captive cats in a distributed manner with the cooperation of nine zoo facilities throughout Japan. These are promoting initiatives to improve and establish methods for breeding the cats in captivity, and in Tsushima, Nagasaki Prefecture the installation of a facility related to acclimating the cats to the wild is underway in order to establish methods for reintroducing cats that have been bred in captivity into the wild.

In addition, the release of Oriental stork (*Ciconia boyciana*) into the wild began in FY2005, and as of the end of September 2013 there were 82 of them living in the wild (Figure 3-1-28).

Approaches will continue to be promoted in partnership with the relevant organizations while also incorporating the perspective of the preservation and use of cultural properties.

Figure: 3-1-28 Number of wild Japanese crested ibis and Oriental stork



(Trend) Japanese crested ibis: The number of Japanese crested ibis in the wild has been on a steadily rising trajectory.
Oriental stork: The Oriental stork began to be reintroduced to the wild in 2005, and since then the number of birds in the wild has been increasing favorably.

* For the Tsushima leopard cat at the current stage the establishment of techniques for reintroducing them to the wild is being examined. According to the latest survey (in the first half of the 2010s), the population estimated to be living in their habitat region is assumed to be around 100 cats at the utmost, which is roughly the same or a slight decline from the previous survey in the first half of the 2000s.

Key Action Goal C-2-5	For the genetic resources of crops, create coordinated and complementary networks for the conservation of plant genetic resources in order to prevent valuable genetic resources from disappearing from within Japan, while also giving consideration to the establishment of a systematic safety back-up system to guard against disasters. For the genetic resources of livestock animals, move forward with securing and using a diverse array of breeding resources that possess genetic advantages by focusing primarily on varieties that are unique to Japan, such as Wagyu beef, locally raised chicken, and Japanese horse breeds (MAFF).

Within the Agricultural Biological Genebank Project 2011, Japan implemented strategically and efficiently with the other organizations to collect, characterize, preserve and distribute wide range of genetic resources (plants, animals, and microorganisms, etc.).

Particularly, with respect to plant genetic resources, consideration will be given to the establishment of a systematic safety back-up system for the resources within and outside Japan to guard against disasters.

(4) Strategic Goal D

Strategic Goal D	Enhance the benefits to all from biodiversity and ecosystem services
National Strategic Goal: D	Strengthen the benefits obtained from biodiversity and ecosystem services.

Japan is working to strengthen the benefits obtained from biodiversity and ecosystem services, including their contributions to climate change adaptation and mitigation, through the *Satoyama* Initiative and other efforts.

However, consideration must continue to be given to methods to determine the ecosystem conservation and restoration status. Moreover, initiatives are also being promoted towards the early conclusion of the Nagoya Protocol on ABS so as to contribute to strengthening the benefits obtained from biodiversity and ecosystem services.

(1) Aichi Biodiversity Target 14

Aichi Biodiversity Target 14	By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
National Target: D-1	Strengthen the benefits received from biodiversity and ecosystem services in Japan and elsewhere by giving consideration to the needs of women and local communities through the conservation and restoration of ecosystems by 2020. Carry out initiatives for each species with an awareness of the importance of the sustainable use of natural resources found in Satochi-Satoyama areas in particular.

The *Satoyama* Initiative is being promoted within Japan and overseas through the use of the International Partnership for the *Satoyama* Initiative and the *Satoyama* Initiative Promotion Network, while sustainable forest management, the promotion of agriculture, the conservation and use of *Satoyama* areas, and Satoumi development are being promoted nationwide. Moreover, efforts are being made to strengthen the benefits received from biodiversity and ecosystem services in a variety of forms, such as promoting the Green Reconstruction Project for rebuilding from the Great East Japan Earthquake and making use of the arrangements for biosphere reserves (UNESCO Eco-Parks).

Key Action Goal D-1-1	Establish sustainable forest management and promote the development and conservation of diverse and healthy forests in the aim of thereby allowing them to exhibit multifunctionality, such as watershed conservation (MAFF).

Japan provides support for forest operations like thinning and the installation of road networks in combination with this. In addition, it designates conservation forests that are especially needed to exhibit the public functions of forests and promotes their appropriate conservation and management in the aim of thereby allowing them to exhibit the multifunctionality that forests possess, such as watershed protection

The area of conservation forests as of the end of FY2012 came to 12.09 million ha, and this tends to increase every year.

Key Action Goal D-1-2	Strive to conserve and use the environment in rural areas and utilize regional resources through the sustainable agriculture (MAFF).

In FY2012, attempts to improve the agricultural environment such as ecosystem conservation and daily management of resources including agricultural lands and channels were carried out. These included regional joint activities such as mud dredging and mowing along channels with the participation of 1.87 million people and organizations.

Key Action Goal D-1-3	Promote the *Satoyama* Initiative, which is an initiative that aims to improve biodiversity, ecosystem services, and human welfare, both domestic and overseas (MOE, MEXT, MAFF, MLIT).

The number of organizations taking part in the International Partnership for the *Satoyama* Initiative, which was launched at the Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10), has grown from the 51 organizations from the time of its initial launch to a total of 155 organizations, including the governments of 16 countries. Moreover, the *Satoyama* Initiative Promotion Network, which promotes coordination between the relevant organizations within Japan under the principals of the initiative, was established at the fourth regular meeting for the initiative (September 2013) with the participation of 101 organizations.

Japan is providing technical support to a number of initiatives based upon the Action Plan for the Conservation and Sustainable Use of Socio-ecological Production Landscapes (Satoyama), which was formulated in FY2010, with a view towards the conservation and use of Satoyama areas within Japan. These initiatives include holding technical training courses, sharing information related to precedent case examples, and handbooks on methods for selecting regions subject to conservation and their conservation and management.

Hereafter, Japan will promote conservation and use that gives consideration to the importance of the conservation of biodiversity.

Key Action Goal D-1-4	With a view towards reconstruction from the Great East Japan Earthquake, promote the Green Reconstruction Project that is centered around the creation of the Sanriku Fukko (Reconstruction) National Park. This is to be done by passing down the natural environment and local life that has been fostered through the connections between forests, satoyama, rivers, and sea to future generations; learning about both the blessings and threats from nature; and making use of these. Establish the Sanriku Fukko (Reconstruction) National Park and promote the reorganization of national parks by 2013. What is more, promote the restoration of coastal forests through the Green Bonds Regeneration Project, which gives forethought to conserving biodiversity (MOE, MAFF).

Japan established the Sanriku Fukko (Reconstruction) National Park in May 2013, and has been steadily implementing the Green Reconstruction Project. This encompasses the establishment of the Michinoku Shiokaze Coastal Trail (a nature trail along the Pacific Coast of Tohoku) and the promotion of Fukko (Reconstruction) Ecotourism, as well as monitoring of the natural environment and more.

As of FY2012, work to restore and regenerate approximately 50 km of the 140 km of coastal disaster prevention forests that were damaged from the tsunami during the Great East Japan Earthquake had been started. During FY2013 work was started on approximately all 100 km when temporary storage sites for rubble and the like are excluded.

Reconstruction, restoration, and regeneration will continue to be promoted through such efforts.

Key Action Goal D-1-5	Implement initiatives to create Satoumi areas by means of making appropriate human interventions while living in harmony with nature (MOE).

Guidelines on developing Satoumi areas and information on practical case examples from around Japan are provided via the “Satoumi Net” website in order to support the creation of Satoumi areas full of nature’s bounty in which a diversity of fish and shellfish live and from which people can enjoy their benefits on into the future.

Moreover, the Miyako Port Satoumi Restoration Plan, which consists primarily of regenerating eel grass beds, was formulated in FY2012 with a focus on Miyako Port in Iwate Prefecture. There are plans to formulate the Guidelines on Formulating Satoumi Restoration Plans, which compile know-how on Satoumi restoration, in FY2013.

Key Action Goal D-1-6	Move ahead with considerations for efforts like developing new policies to utilize the arrangements for Biosphere Reserves, which are better known as “UNESCO Eco Park” in Japan (MEXT, MAFF, MOE).

In September 2013, 26th Session of Japanese National Committee for MAB of the Japanese National Commission for UNESCO decided to submit the nomination to UNESCO that Tadami (Fukushima Prefecture) and Minami-Alps (Yamanashi Prefecture, Nagano Prefecture, and Shizuoka Prefecture) be newly designated as new biosphere reserves (BR). It also decided to submit the nomination for the expansion of Shiga Highland BR (Gunma Prefecture and Nagano Prefecture). For hereafter, in June 2014, 26th Session of MAB International Co-ordinating Council will be held in Sweden, and their proposals will be examined whether they are approved or not by the Council.

Moreover, Aya BR (Miyazaki Prefecture) designated in July 2012 is also promoting various activities implemented by local communities, such as applying all of the elementary and middle schools in the Town of Aya to ASPnet School so that local children could learn ESD within their BR, as well as promoting the Aya Lucidophyllous Forest Project that aims to conserve and restore lucidophyllous forests.

In addition, the public awareness with regard to BR is being promoted, and some promotion structures are being organized, including through participation of the relevant ministries and agencies in local consultation committees.

The implementation of BR projects will be promoted hereafter as well, in addition to which the relevant ministries and agencies will further work in collaboration to provide support to each local region.

(2) Aichi Biodiversity Target 15

Aichi Biodiversity	By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded

Target 15	ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.
National Target: D-2	Strengthen the contributions of biodiversity to resilience of ecosystem and their storage of carbon dioxide by conserving and restoring ecosystems, including restoration of at least 15% or greater for degraded ecosystems, thereby contributing to climate change mitigation and adaptation by 2020.

Initiatives for nature restoration, appropriate forest operations, and the establishment of green corridors are being advanced nationwide, as evidenced by the initiatives for nature restoration based on the Law for the Promotion of Nature Restoration having been carried out in 24 locations over 480,000 ha. The expectation is that these initiatives will contribute to climate change mitigation and adaptation.

The number of locations in which initiatives are being carried out via the Law for the Promotion of Nature Restoration, and the area for Protected Forests and Green Corridors on National Forest are trending upwards. What is more, sink measures are also steadily being advanced through the promotion of efforts like forest maintenance and urban greening.

However, consideration must continue to be given to methods to determine the ecosystem conservation and restoration status.

Key Action Goal D-2-1	Establish methods and standard values to serve as baselines designed to understand the status of conservation and restoration of ecosystems, as well as sorting out their current status, by the midterm review of the Aichi Biodiversity Targets that arescheduled for 2014 or early in 2015 (MOE, MAFF).

With regard to methods to determine the ecosystem conservation and restoration status, we have decided to determine ecosystem conservation status according to changes in forest area as well as to utilize seagrass beds/ tidal flats area and achievement of environmental quality standard of water in rivers, lakes, marine areas and closed marine areas.

The results showed that forest area is stably maintained at about 2.5million hectares. As for seagrass beds/ tidal flats area and achievement of environmental quality standard of water, there is an overall recovery compared to those in 1980s or 1990s. In particular, achievement rate of environmental quality standards of water in rivers, marine areas and closed marine areas have recovered by over 15% in comparison with those in 1980s or 1990s. We will continuously determine the status of conservation and restoration by using these data, however, methods will be subject to review if needed.

Key Action Goal D-2-2	Promote measures for the conservation and restoration of ecosystems, thereby advancing measures that will contribute to climate change mitigation and adaptation (MOE, MAFF, MLIT).

As of March 2013 initiatives for nature restoration based on the Law for the Promotion of Nature Restoration were carried out in 24 locations over as much as 480,000 ha. Initiatives for nature restoration were advanced nationwide focusing on a variety of ecosystems, such as forests, wetlands, grasslands, and coral reefs (Figure 3-1-29).

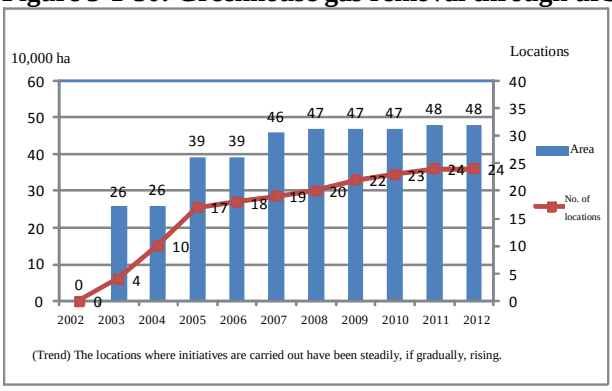
Support is provided to the initiatives for nature restoration carried out by prefectures, which is expected to be effective at contributing to climate change adaptation, such as by securing corridors for the migration of living things.

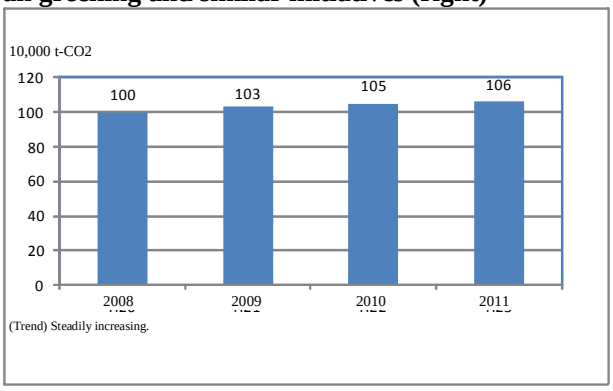
Sink measures are also being carried out through the promotion of efforts like forest maintenance and urban greening, along with which progress is also being made on research and studies on carbon fixation for marine life (Figure 3-1-30).

In addition, research, workshops, and so forth related to shared challenges in local regions is carried out through the Asia-Pacific Network for Global Change Research.

Forest sink measures and other such measures will continue to be advanced in the future as well. In addition, the Subcommittee on Evaluating the Impact of Climate Change, Global Environment Committee, Central Environment Council will continue to move ahead with deliberations over evaluating the impact and risks that climate change will have on Japan. This is being done with a view towards the formulation of an adaptation plan with a target date of sometime around the summer of 2015.

Figure 3-1-29: Area of initiatives and number of locations for the Law for the Promotion of Nature Restoration (left)
Figure 3-1-30: Greenhouse gas removal through urban greening and similar initiatives (right)



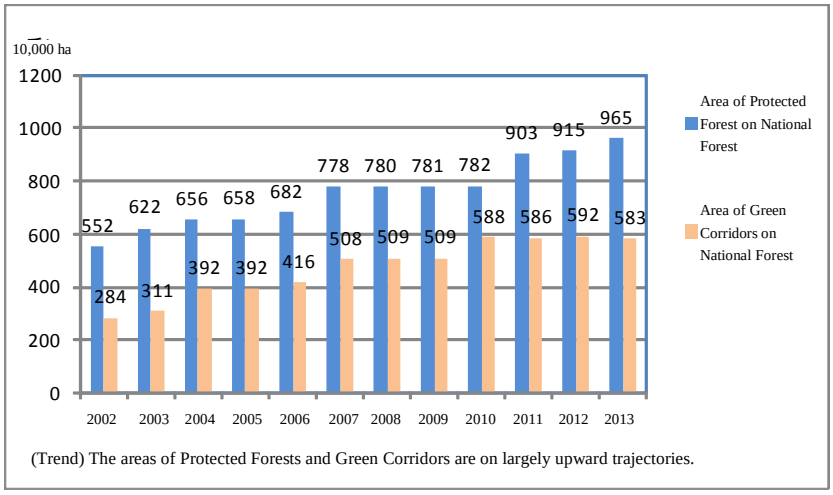


Key Action Goal D-2-3	Contribute to climate change mitigation and adaptation by means of promoting forest sink measures such as properly carrying out forest operations like thinning in forests, as well as establishing green corridors to serve as migration routes for wildlife (MAFF).

Forest sink measures are being promoted in a comprehensive manner based upon the Basic Plan for Forests and Forestry and other such plans. These include maintaining healthy forests through efforts like thinning, promoting the appropriate management and conservation of conservation forests, and promoting the use of wood and woody biomass.

For National Forest, Green Corridors that form networks based primarily around Protected Forests are established, and migration routes that link habitats for wild plants and animals are secured. This in turn promotes the securing of healthy forest ecosystems that are capable of coping with climate change. As of April 2013 there was as much as 955,000 ha of Protected Forests and 583,000 ha of Green Corridors on National Forest, with these on a largely upwards trajectory (Figure 3-1-31).

Figure 3-1-32: Area of Protected Forests and Green Corridors on National Forest



(3) Aichi Biodiversity Targets 16

Aichi Biodiversity Target 16	By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.
National Targets: D-3	Aim to ratify the Nagoya Protocol on ABS as early as possible and implement the domestic measures for this Protocol by 2015 at the latest.

There are various challenges towards the achievement of the early acceptance of the Nagoya Protocol and the implementation of the domestic measures. The concerned parties and related government ministries and agencies have been considering them carefully.

Moreover, Japan provides support to developing countries through the Global Environment Facility (GEF), the Nagoya Protocol Implementation Fund, and others in order to contribute to the global achievement of Target 16.

Key Action Goal D-3-1	Ratify the Nagoya Protocol as early as possible, and implement steadily the obligations under the Protocol such as designation of one or more checkpoints to monitor the use of genetic resources and awareness raising by 2015 at the latest (MOE, MOFA, MOF, MEXT, MHLW, MAFF, METI, MLIT).

There are various challenges including the development of the domestic measures, towards the achievement of the early acceptance of the Nagoya Protocol and the implementation of the domestic measures. The concerned parties and related government ministries and agencies have been considering them in the aim of building consensus.

As a part of the consideration on the domestic measures necessary for the acceptance of the Nagoya Protocol, the Ministry of the Environment had been holding a consultative committee comprised of experts and key persons from related industrial areas and academic fields in order to gather and organize views and opinions on the direction of the direction of the domestic measures to be taken in Japan. A report of the committee was finalized in March 2014 after inviting public comments with the purpose of gathering a wider range of opinions.

Furthermore, in order to spread the understanding of the Nagoya Protocol, the related government ministries and agencies have been working to raise public awareness by means of holding briefing sessions and sessions for exchanging opinions for industries, university researchers, and more.

The concerned parties and related government ministries and agencies will continue coordinating to move forward with the consideration on the domestic measures.

Key Action Goal D-3-2	Support developing countries for their ratification of the Protocol through the Global Environment Facility (GEF), the Nagoya Protocol Implementation Fund (NPIF), etc., in order to contribute to the global achievement of Target 16 (MOFA, MOF, MOE).

Japan is working to provide support for a number of initiatives geared towards the early conclusion and effective implementation of the Nagoya Protocol on ABS through the use of the GEF, the Nagoya Protocol Implementation Fund, the Japan Biodiversity Fund, and others. These include developing domestic institutions in developing countries, promoting the participation of the private sector and investments in the conservation and sustainable use of genetic resources, and capacity building for indigenous and local communities in order to ensure reasonable access to traditional knowledge related to genetic resources.

(5) Strategic Goal E

Strategic Goal E	Enhance implementation through participatory planning, knowledge management and capacity building
National Strategic Goal: E	Steadily promote policies based upon the National Biodiversity Strategy of Japan, strengthen the scientific grounds as a foundation for such promotion, and promote capacity development in the biodiversity field.

Japan works to steadily promote its national strategy by examining the state of progress of the measures that are based on it.

Furthermore, progress is being made with setting in place structures for the collection, provision, and sharing of information related to biodiversity within Japan. In addition, efforts are being made to strengthen scientific grounds through the proactive participation in, contribution to, and establishment of domestic structures for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

What is more, capacity building for the biodiversity field is also being promoted through support via the GEF, the Japan Biodiversity Fund, and others.

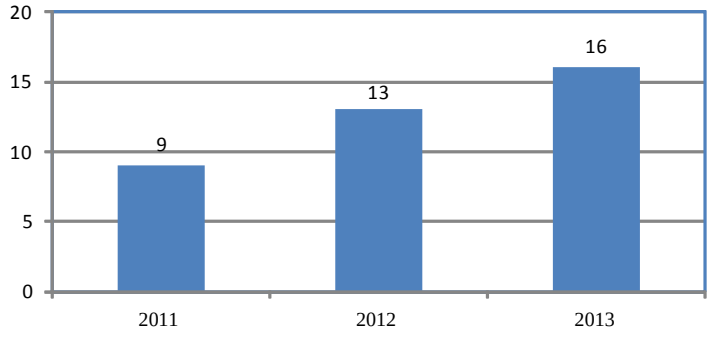
(1) Aichi Biodiversity Target 17

Aichi Biodiversity Target 17	By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
National Target: E-1	Strive to promote policies related to the conservation of biodiversity and sustainable use based on the National Biodiversity Strategy of Japan in a comprehensive and systematic manner. Furthermore, provide support and cooperation to ensure that global initiatives geared towards achieving Target 17 are developed.

Japan is instituting its initial comprehensive examinations designed to promote measures based on the National Biodiversity Strategy of Japan in a comprehensive and systematic manner. It will also consider the necessity of revising the National Biodiversity Strategy of Japan based upon the results of the midterm evaluations concerning the achievement status of the Aichi Biodiversity Targets at COP12.

Japan also provides support to developing countries for the achievement of Target 17 on a worldwide basis through the GEF, the Japan Biodiversity Fund, and others. As for party countries that have received technical support through the Japan Biodiversity Fund, the number of countries that have revised their national biodiversity strategies has been rising steadily (Figure 3-1-32).

Figure 3-1-32: Number of countries that have revised their national biodiversity strategies from out of the party countries that have received technical support through the Japan Biodiversity Fund



(Trend) The number of countries has been steadily rising due to the holding of workshops and promotion of support through the GEF in various regions.

Midterm evaluations of the Aichi Biodiversity Targets are slated to be carried out at COP12, which will be held in South Korea in October 2014, and Japan is preparing its Fifth National Report to serve as basic information for this.

The necessity of revising the National Biodiversity Strategy of Japan will be examined based upon the results of the midterm evaluations related to the achievement status of the Aichi Biodiversity Targets at COP12.

Key Action Goal E-1-2	Contribute to the global achievement of Target 17 through the Global Environment Facility (GEF), the Japan Biodiversity Fund, and others (MOFA, MOF, MOE).

Capacity building workshops for revising national strategies with a view towards the achievement of the Aichi Biodiversity Targets are being held in each region of the globe through the use of the Japan Biodiversity Fund. As of May 2013, 22 workshops had been held all over the world in which more than 700 government officials from approximately 170 party countries have taken part. As such, initiatives are being promoted for the achievement of Target 17 of the Aichi Biodiversity Targets on a worldwide basis.

(2) Aichi Biodiversity Targets 18-20

Aichi Biodiversity Target 18	By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
Aichi Biodiversity Target 19	By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.
Aichi Biodiversity Target 20	By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.
National Target: E-2	Have respect for local communities' traditional knowledge related to the conservation and sustainable use of biodiversity mainstreamed by 2020. Moreover, strengthen scientific grounds pertaining to biodiversity as well as the connections between science and policy. Effectively and efficiently mobilize the resources (funds, human resources, technologies, etc.) needed to achieve the Aichi Biodiversity Targets by 2020 at the latest.

For conservation activities for Satochi-Satoyama areas, initiatives to reevaluate and use the wisdom and techniques of local communities are promoted, such as by working on policies for using traditional natural resources.

Furthermore, progress is being made with setting in place structures for the collection, provision, and sharing of information related to biodiversity, including that of marine life. In addition, Japan proactively participates in the IPBES so as to constitute an effective and efficient framework that is grounded in scientific grounds.

However, consideration must continue to be given to methods to determine the mobilization of resources in Japan.

Key Action Goal E-2-1	Reevaluate the wisdom on traditional knowledge and techniques for resource usage that have been cultivated in response to the natural characteristics of local regions, and strive to pass them down and promote their use (MOE, MEXT).

Case examples are collected and information is disseminated on policies for using traditional natural resources in Japan based upon the Action Plan for the Conservation and Sustainable Use of Socio-ecological Production Landscapes (*Satoyama*) that was formulated in FY2010. Since FY2012 Japan has also been considering methods for effectively using the grass and wood-based biomass resources that are generated through its conservation activities for Satoyama areas.

Furthermore, landscapes that are important in a cultural sense for which the appropriate protection measures are taken are designated as "cultural landscapes" pursuant to the Act on Protection of Cultural Properties, and efforts are made for their protection.

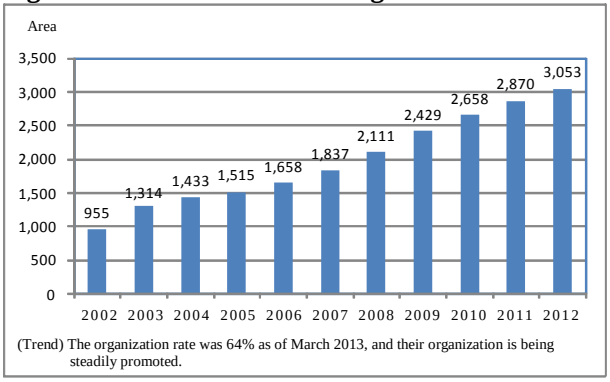
Key Action Goal E-2-2	Enhance data collection on the natural environment, such as the National Survey on the Natural Environment, continuously and quickly update it, and improve how quickly information from it is disseminated, while also setting in place structures to collect, provide, and share data through collaborations between various actors by 2020 (MOE, MEXT, MAFF, MLIT).

As part of the National Survey on the Natural Environment, progress is being made with organizing vegetation maps, in addition to which monitoring surveys on different ecosystems that are representative of Japan are being carried out in approximately 1,000 locations nationwide (Figure 3-1-33).

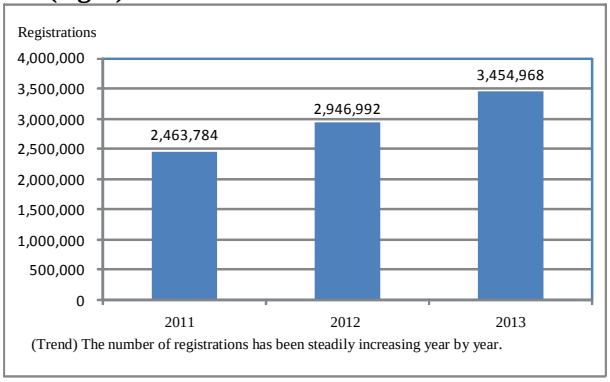
Moreover, monitoring surveys on things like forests and animals are carried out for the Protected Forests and Green Corridors that was established on National Forest. Additionally, studies on fish, benthic animals, zooplankton and phytoplankton, and more are carried out as part of the National Census on River Environments.

What is more, support is provided to the activities of the Japan Node (JBIF) of the Global Biodiversity Information Faculty (GBIF), which collects and publicizes information related to biodiversity, through which the setting in place of structures for the collection, provision, and sharing of biodiversity-related information is promoted (Figure 3-1-34).

Figure 3-1-33: Status for the organization of 1/25,000 vegetation maps (left)
Figure 3-1-34: Status of data registration with the GBIF (right)



(Trend) The organization rate was 64% as of March 2013, and their organization is being steadily promoted.



(Trend) The number of registrations has been steadily increasing year by year.

Key Action Goal E-2-3	Work to round out the scientific knowledge related to marine organisms and ecosystems by 2020 (MEXT, MOE, MLIT).

Japan seeks to explain the physiology of marine life, as well as marine ecosystems themselves in a comprehensive manner. It also undertakes the technical development of models that make it possible to evaluate the impact on ecosystems from environmental changes and fishing activities.

Japan is moving ahead with seeking to explain the material cycle within tidal flats and the functions and structures of ecosystems, as well as developing numerical simulations that keep predictions of biodiversity in mind. This is being done through research and studies on one of the world's largest tidal flat aquariums, as well as wide-ranging surveys on living things in natural tidal flats as well as artificial tidal flats and seagrass beds. Efforts on enhancing research and monitoring on marine life and ecosystems will be continued.

Key Action Goal E-2-4	Carry out comprehensive assessment of biodiversity in Japan and perform midterm assessment related to Japan's national targets for the achievement of the Aichi Biodiversity Targets (MOE, MOFA, MEXT, MAFF, METI, MLIT).

The first comprehensive examination of the National Biodiversity Strategy of Japan 2012-2020 was carried out during FY2013, together with which the Fifth National Report was created based upon the Convention on Biological Diversity. Through such efforts evaluations concerning Japan's national targets for the achievement of the Aichi Biodiversity Targets were also evaluated.

Comprehensive evaluations related to the biodiversity in Japan are slated to be carried out up through FY2015.

Key Action Goal E-2-5	Japan will actively participate in and contribute to the IPBES in order to make it an effective and efficient framework that is grounded in scientific evidence, and will set in place a domestic structure for this purpose (MOE, MAFF).

With respect to the IPBES that was established in April 2012, Japan participates in related meetings to which it dispatches its experts, while also contributing to setting in place structures for the IPBES through donations and consulting on and coordinating over the contents of its activities. It has also hosted the International Expert and Stakeholder Workshop on the Contribution of Indigenous and Local Knowledge Systems to IPBES and the IPBES Asia-Pacific Regional Workshop on Scientific Assessments, among others.

Since FY2013 it has also been setting in place, evaluating, and making predictions on information foundations for biodiversity and ecosystem services in Japan.

Key Action Goal E-2-6	Set in place a structure to determine the extent to which resources have been mobilized in Japan for the sake of achieving the Aichi Biodiversity Targets and to report this to the Secretariat of the Convention on Biological Diversity based upon the decisions at COP10 (MOE).

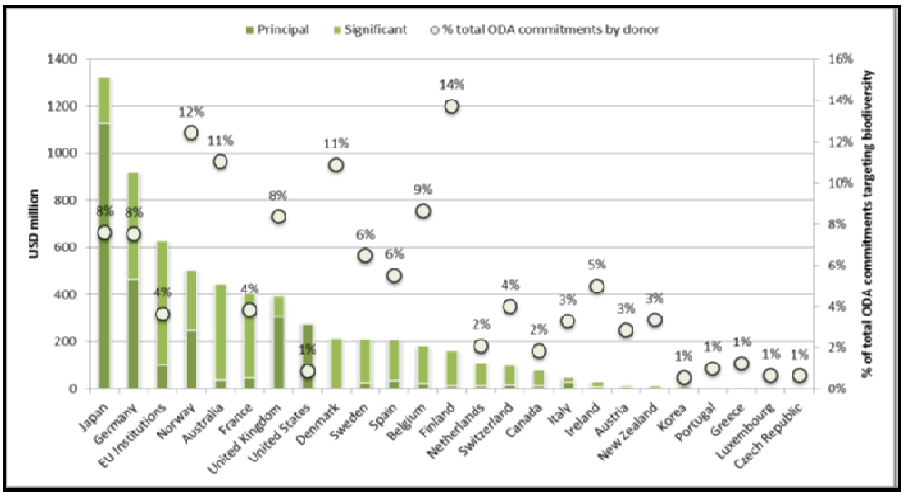
In light of the fact that an agreement was reached on provisional targets related to resource mobilization at COP11, which was held in October 2012, Japan has been proactively participating in discussions at international forums. It has also been considering methods for determining resource mobilization in Japan through surveys and analyses related to the policies and plans of different countries towards resource mobilization.

Question 11. What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in your country?

3.2. Contributing to the Outcomes of the Millennium Development Goals

Japan places emphasis on the Millennium Development Goals (MDGs) as goals that the international community must join forces to address in order to build a better world, and as such it effectively makes use of bilateral ODA and ODA provided through international organizations. In order to proactively contribute to the achievement of the MDGs, it provides comprehensive support in terms of both hard and soft aspects by harnessing its wealth of experience, knowledge, and technologies for the field of Target 7 (environment, water and sanitation) of the MDGs. Furthermore, when it comes to biodiversity-related ODA in particular, on average from 2010-2011 Japan provided the most bilateral assistance of any country on the DAC for ODA, and when you combine this with that from the EU and Germany they provided roughly half of the world's biodiversity-related assistance.

Figure 3-2-1: Average amount of (bilateral) support for biodiversity-related assistance from DAC countries from 2010-2011



In 2003, Japan revised the Official Development Assistance (ODA) Charter which was approved by the Cabinet in 1992. "Addressing global issues" including environmental problems is defined as one of the priority issues, and "environmental conservation and development should be pursued in tandem" is placed as one of the four principles of ODA implementation. Furthermore, in the Medium-Term Policy on ODA revised in 2005, "conservation of the natural environment by means such as the management of nature reserves, conservation and management of forests, measures against desertification, and natural resources management" are positioned as priority fields in the approaches and specific actions to address environmental problems. Based on these policies, Japan has been actively contributing to the world wide conservation of biodiversity through assisting the conservation and sustainable use of biodiversity in developing countries.

The Aichi Biodiversity Targets and Nagoya Protocol on ABS were adopted at COP10, which was held in Nagoya City in October 2010. For its "Life in Harmony Initiative" designed to support the initiatives of

developing countries in the aim of achieving the Aichi Biodiversity Targets, Japan announced that it would provide a total of US$2 billion to sectors that are of use in conserving biodiversity over three years beginning in 2010. Japan also spearheaded the establishment of the Nagoya Protocol Implementation Fund (NPIF) for the Global Environment Facility (GEF) in order to support the early entry into force and effective implementation of the Nagoya Protocol on ABS, and contributed 1 billion yen to this in 2011. What is more, in 2010 and 2011 Japan donated 5 billion yen to the Secretariat of the CBD for the establishment of the Japan Biodiversity Fund, and provided support for the capacities of developing countries concerning the achievement of the Aichi Biodiversity Targets.

Hereafter, it will be extremely important to continue ensuring the conservation and sustainable use of biodiversity by means of steadily working to address these targets.

Question 12. What lessons have been learned from the implementation of the Convention in your country?

3.3. Lessons Learned From Implementing the CBD

As has been indicated in this report, Japan is promoting initiatives geared towards the implementation of the Strategic Plan for the National Biodiversity 2011-2020 from the Convention and the achievement of the Aichi Biodiversity Targets through the formulation and implementation of the National Biodiversity Strategy of Japan. For some of its initiatives it has achieved the goals geared towards the Aichi Biodiversity Targets to a certain extent, but for most of these Japan is in the midst of working on measures for their achievement. Furthermore, as was stated in Chapter 1 of the National Biodiversity Strategy of Japan 2012-2020 and the Japan Biodiversity Outlook, a variety of measures have been taken against the first through fourth crises concerning biodiversity in Japan. However, it has become clear that these crises are still advancing.

In addition, challenges for the conservation and sustainable use of biodiversity in Japan are listed below.

(1) Understanding of and action for biodiversity

In a public opinion survey by the Cabinet Office from 2009, 13% of the people surveyed knew the meaning of the term “biodiversity,” and this came to 36% when you included the people who had heard the term. But in this same survey from 2012 these had risen to 19% and 56%, respectively, from which it is believed that recognition of biodiversity rose rapidly on account of COP10. In addition to having people understand the meaning of and knowledge about biodiversity, it will also be necessary to deepen their understanding of societies that live in harmony with nature by getting them to intuitively understand that people are a part of nature and that we live by receiving the benefits of nature. This should be done through hands-on experience in which they come into contact with nature. But in recent years the number of children and young people who barely have any hands-on experience with nature—including swimming in the sea or rivers, capturing insects, or camping—has been on the rise. Initiatives to prevent global warming as symbolized by COOLBIZ are deployed in the form of national movements for the prevention of global warming, such as by practicing specific conduct geared towards reducing CO2 in offices, homes, and so on. But initiatives for the conservation of biodiversity have yet to reach the stage where they have been mainstreamed across society in the same way that initiatives to prevent global warming have. According to the environment-friendly business behaviour survey that was carried out by the Ministry of the Environment in FY2010, more than 90% of companies responded that they “Set policies” or “Carry out initiatives” (or do both) when it comes to initiatives to prevent global warming. Conversely, this remained down around 30% of the companies when it came to initiatives for the conservation of biodiversity. While the number of companies working to address the conservation of biodiversity has been on an upward trajectory from year to year, it is still not adequate when compared with initiatives to prevent global warming. Given such circumstances, the “mainstreaming of biodiversity” could be described as a challenge. This encompasses initiatives for the crises of biodiversity, as well as promoting understanding of biodiversity through hands-on experience, deploying initiatives for the conservation and sustainable use of biodiversity as national movements, and working to convert over to social systems and lifestyles that take biodiversity into consideration. In addition, according to a nation-wide social psychological survey result conducted by the National Institute for Environmental Studies to clarify the relationship between citizen’s cognition on the ecosystem services and his/her actions for conservation, the level of one’s attitude to conservation actions rises when the degree of his/her cognition on the fact that the

person close to him/her is making actions or his/her cognition on the benefit from the cultural service of the ecosystem services increases. In this manner, it will be important to comprehend what can become incentives when promoting the mainstreaming of biodiversity.

(2) Securing human resources and cooperation

Progress continues to be made in various regions with movements for the conservation and sustainable use of biodiversity, such as through initiatives to restore nature, the conservation of Satochi-Satoyama areas, and the eradication of alien species. However, these have been limited to localized initiatives in respective regions and initiatives that have been led individually, and so continuing to promote cross-cutting initiatives that are both all-encompassing and sector-specific will be a challenge for the future. What is more, it is important that activities for the conservation of biodiversity be addressed continuously over an extended period of time, but in some cases it is difficult to continue on with initiatives for activities that rely on the efforts of individuals or of particular organizations. For this reason, creating mechanisms for carrying on with initiatives is an important challenge, with this including erecting structures for initiatives in local communities and forming nationwide networks through the coordination and cooperation of various different actors. Another challenge is the fact that there is a lack of human resources who will oversee the conservation of biodiversity, the conservation and management of wildlife, the maintenance and restoration of ecosystems, education and research and studies related to biodiversity in local regions, and similar activities. As an example, the population of hunters, who are important leaders when it comes to protecting and managing wildlife, has declined from approximately 530,000 people in FY1970 to roughly 200,000 people as of FY2011, and they continue to advance in age as well. What is more, when it comes to school education, efforts have been made to round out the content related to biodiversity in the Course of Study. However, there is a need to train and make use of human resources who fully understand biodiversity and are capable of teaching it in educational settings, with this including social education as well. While it is important to promote the training of human resources involved in the conservation and sustainable use of biodiversity, it is conversely also important to continue to increase the venues and opportunities for human resources who possess expert knowledge and skills to be able to thrive.

(3) Recognition of the "socio-ecological spheres" connected through ecosystem services

The Great East Japan Earthquake laid bare the vulnerabilities of socioeconomic systems that are overly concentrated on the production and distribution of energy and goods. As a result, each respective region in Japan must aspire towards autonomous, decentralized social systems that practice the local production for local consumption of regional resources such as food and energy, and which circulate and use these sustainably within each region. Such, autonomous, decentralized local communities must serve as a foundation for aspiring towards the circulation and sustainable use of things that this is feasible for within the region, while those things for which this would be difficult must be perceived from a more broad-ranging perspective that includes both Japan and overseas. Rural areas that possess abundant nature constitute the primary source of ecosystem services, but their benefits are enjoyed over a wide area that also includes cities as well. For example, properly managing the forests in the upstream parts of a river basin make it possible for the downstream parts of the same basin to receive the ecosystem services offered by the forest, which include the prevention of sediment discharge and watershed protection. However, since such connections are ordinarily not readily apparent, cities are able to receive the benefits of ecosystem services provided by rural areas without bearing a significant burden. This sort of relationship must be revised in order to create mechanisms whereby the capital, human resources, information, and other resources found in cities are supplied to rural areas so that each can support the other. Having people perceive of such regions in which the demand for and supply of ecosystem services are connected in an integrated manner as "socio-ecological sphere" will be a challenge for the future. So too will be deepening coordination and exchange with such spheres by linking together producers with consumers, by way of example. Moreover, as was mentioned in Section 1, when you consider that the lives of the Japanese people are underpinned by ecosystem services from overseas, then considerations of this awareness of spheres for living in harmony with nature can be extended to other countries as well. As such, the relationship between cities and rural areas can be supplanted with the relationship between Japan and resource producing countries. In this manner, it will be necessary to recognize the connections through the demand for and supply of ecosystem services within their respective spheres, while also having them mutually complement, depend on, and sustain one another according to the scale of these connections.

(4) Conservation and maintenance of national land based on population decline and other factors

Varied appeals have been made regarding the national land in Japan in accordance with the era, with the result being that cities and rural villages have been created and much of the landscapes and nature that surround us have been formed. The formation of such national land has enriched our lives, but on the other hand there is the fact that we have given priority to accommodating rapid economic growth and population increases as part of this. Reflecting back upon the current age also reveals that the need has arisen to make improvements from the perspectives of biodiversity, fire prevention, and so on. There have been significant losses to Japanese biodiversity as a result of the rapid changes from the period of rapid economic growth following World War II. What is more, past population increases have been accompanied by an expansion of residential areas onto land that is inherently vulnerable to natural disasters, and this has required enormous costs to set in place infrastructure in order to ensure the safety of such areas. According to the future population projections for Japan announced in January 2012, its population is predicted to fall to 86.74 million people by 2060. As this shows, the coming era in which there will be extra leeway to be found in the use of national land as a result of the declining population could be described as an opportunity to restructure appropriate modalities for people and national land. As part of this, an ideal vision for the future of national land must continue to be sketched out, with this including comprehensive determinations as well. For example, land that will no longer be scrupulously managed once humans are no longer living on it will be left to transition naturally and allowed to revert back to forests. When it comes to Satoyama areas as well, it will not be possible to continue conserving all of them over the course of changing social structures and advancing depopulation. From this perspective, it will be necessary to continue giving consideration to modalities for their future conservation and management, such as by having each region perform focused conservation on those locations that they would like to see preserved. Moreover, Japan must continue to reclaim the natural connections on its national land that have been divided. In addition, it must also continue to form ecological networks from an international perspective centered around the Asian region since Japanese biodiversity is largely connected with that of other countries, particularly the Asian region. Furthermore, given the movements seeking to promote the reorganization of the use of national land, aspiring towards national land that allows for easy circulation and sustainable use within regions—while also taking the connections of ecosystem services into consideration based upon the thinking behind the socio-ecological spheres mentioned above—is also conducive to reducing the impact had on the biodiversity in other countries.

(5) Enhancing scientific knowledge

Challenges that could be listed against the backdrop of the lack of progress in action geared towards the conservation and sustainable use of biodiversity include the fact that the status of biodiversity has not been adequately determined and evaluations based upon scientific knowledge have been lacking. With respect to information related to biodiversity at the national level, ongoing surveys centered mainly around the National Survey on the Natural Environment, which has been performed since 1973, have been carried out. However, it is important that such surveys be carried out in an ongoing manner via the same methods in order to perceive changes over time. Moreover, it will also be important to have museums and similar places in local regions accumulate materials such as samples of living creatures and literature to serve as basic data on biodiversity. A variety of actors—including national governments, local municipalities, research institutes, museums, NGOs and NPOs, experts, and citizens—retain various types of information related to biodiversity from the national level down to the regional level as a result of their own respective research and studies. Such information must be published and provided to one another in a format that is easier to use, and must continue to be used in national measures and the initiatives of each of the actors. In addition, since adequate progress has not been made with comprehensive analyses of natural sciences and social sciences and research related to options for and the results of countermeasures, the situation is not one in which decision-making and consensus building can be satisfactorily prompted. This would include indicating the costs necessary for taking action and their results in an easy to understand manner, as well as presenting the options for future action to a diverse array of actors. In the future, scientific knowledge and data must be harnessed for policies and specific measures to a greater extent.

In order to handle such circumstances and challenges, Japan plans to further enhance its initiatives and promote initiatives geared towards the implementation of the Convention in the future by striving for cooperation between the related government ministries and agencies and branch offices based upon the National Biodiversity Strategy of Japan 2012-2020.

Appendix I

1.1. Information on the Reporter

Contracting Party	Japan
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SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	

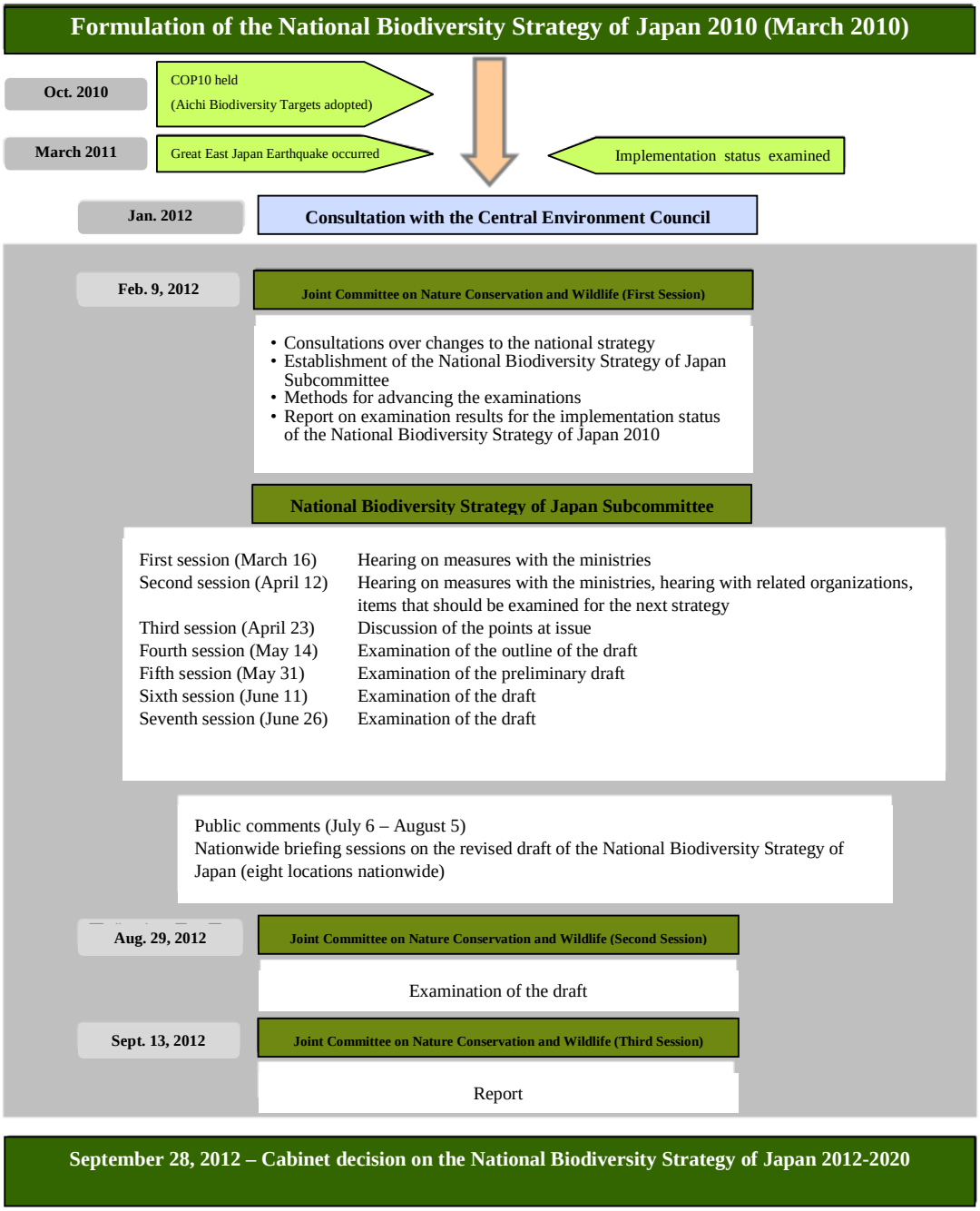
1.2. History of the Preparation of the Fifth National Report

The Fifth National Report was prepared based upon Article 26 of the Convention on Biological Diversity and Decision X/10 from COP10 to the Convention. Concerning its preparation, it was arranged based upon the National Biodiversity Strategy of Japan 2012-2020 that was revised based on the Aichi Biodiversity Targets and an examination of its implementation status in the wake of the submission of the previous Fourth National Report (in 2009).

The details of the National Biodiversity Strategy of Japan 2012-2020 are described in the text of this report. For its formulation, Japan organized the committee of the ministries on the National Biodiversity Strategy of Japan that was comprised of said ministries and agencies. It also heard the opinions of the general public at the Central Environment Council, which is comprised of experts, and through public comments and at national briefing sessions, after which a cabinet decision was reached (Figure A-1).

What is more, in September 2013 the first comprehensive examination of the implementation status of the National Biodiversity Strategy of Japan 2012-2020 was carried out in order to contribute to the submission of the Fifth National Report related to the implementation status for the Convention on Biological Diversity. It was decided that tasks such as the various examinations and revisions would be made by the committee of the ministries on the National Biodiversity Strategy of Japan. This current examination and the Fifth National Report were promoted by coordinating with this committee, with the Ministry of the Environment serving as the Secretariat. Moreover, the opinions of experts were heard through such means as expert hearings and reports to the Central Environment Council. The opinions of a wide range of stakeholders were also heard through public comments, hearings with the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J), and more.

Figure A-1: History of the formulation of the National Biodiversity Strategy of Japan 2012-2020



○Examinations of the formulation, revision, and implementation status of the National Biodiversity Strategy of Japan are performed through liaison and coordination between the relevant government ministries and agencies.
Committee of the ministries on the National Biodiversity Strategy of Japan: Cabinet Secretariat, Cabinet Office, National Police Agency, MIAC, MOFA, MOF, MEXT, MHLW, MAFF, METI, MLIT, MOD, MOE (Secretariat)

1.3. Involved Stakeholders

<Coordination with the relevant government ministries and agencies>

The National Report was formulated by engaging in liaison and coordination with the Cabinet Secretariat, Cabinet Office, National Police Agency, MIAC, MOFA, MOF, MEXT, MHLW, MAFF, METI, MLIT, MOD, and MOE, which are the ministries and agencies that constitute the committee of the ministries on the National Biodiversity Strategy of Japan.

<Hearing the opinions of experts>

The opinions of experts were heard through hearings with experts and reports to the Central Environment Council. They were also heard through coordination with the Comprehensive Research on Measuring, Evaluating, and Predicting Biodiversity across Asia (research designed to evaluate the current state of biodiversity in Asia and make policy recommendations to prevent its loss), which is being implemented via the Ministry of the Environment's Environment Research and Technology Development Fund.

*Comprehensive Research on Measuring, Evaluating, and Predicting Biodiversity across Asia: This is a project that performs measurements of biodiversity across Asia related to seeds and genetic diversity, as well as forests, inland waters, and ecosystems. Its goals are to evaluate the current state of biodiversity in Asia and to make policy recommendations to prevent its loss. It integrates the results of field surveys at fixed-point observation sites with wide-area measurement data based on remote sensing and sampling information and, through the use of distribution modelling, extinction risk assessments, and other such techniques, it evaluates to what extent losses have advanced, as well as in what manner and where in Asia this is taking place. It also provides scientific evidence to determine effective measures when it comes to reducing the loss of biodiversity in Asia, as well as for deciding on their order of priority. In addition, it also contributes to international assessments of biodiversity and revisions to the National Biodiversity Strategy of Japan.
(http://s9.conservationecology.asia/abstract/project)

<Hearing the opinions of the related stakeholders>

A report was made to the UNDB-J, which consists of people of learning and experience, experts, and intellectuals concerned with mainstreaming biodiversity, as well as the economic world, the media, NGOs and other organizations working on conservation and raising public awareness, local municipalities, and the related government ministries and agencies, and the opinions of the related stakeholders were also heard.

<Hearing the opinions of the general public>

Public comment sessions were held where the opinions of a wide range of the public were heard.

1.4. Materials as a basis of this report

1) National Biodiversity Strategy of Japan 2012-2020 (2012)
2) Results of an examination on the implementation status of the National Biodiversity Strategy of Japan 2012-2020 (2014)
3) 2013 Annual Report on the Environment (2013)
4) 2009 Annual Report on the Environment (2009)
5) Fourth National Report on the Convention on Biological Diversity (2009)
6) FY2012 Study to Examine Biodiversity Assessment Maps and the Report on Basic Survey Work related to the 2013 Annual Report on the Environment, the Sound Material-Cycle Society and the Biodiversity in Japan (2013)
7) FY2011 Report on Examination and Survey Work related to the Creation of Biodiversity Assessment Maps (2012)
8) Japan Biodiversity Outlook Report (2010)
9) Comprehensive Research on Measuring, Evaluating, and Predicting Biodiversity across Asia – Summary for Policymakers (2013)
10) Annual Report on Forest and Forestry in Japan (2010)
11) Report by the Science Council of Japan – Evaluation of the Multiple Functions of Agriculture and Forests in relation to the Global Environment and Human Livelihood

12) Results of an examination on the conservation of national endangered species of wild fauna and flora (2012)
13) Japan's Official Development Assistance (ODA) White Paper 2012 – Japan's International Cooperation (2012)
http://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/hakusyo/12_hakusho/index.html
14) Kastner, T., Erb, K.-H. & Nonhebel, S. (2011) International wood trade and forest change: A global analysis. Global Environmental Change, 21, 947-956.

Appendix II

Reference Information

2.1. Web Addresses related to Domestic Implementation

1) Website of the Nature Conservation Bureau, Ministry of the Environment (English)
http://www.env.go.jp/en/nature/
2) Basic Act on Biodiversity
http://www.biodic.go.jp/biodiversity/about/kihonhou/files/biodiversity.pdf
3) Biodiversity website, Ministry of the Environment
http://www.biodic.go.jp/biodiversity/index.html
4) List of biodiversity assessment maps
http://www.biodic.go.jp/biodiversity/activity/policy/map/list.html
5) Website of the recognition of the best practices conducted by various parties by UNDB-J (Outline of the recognised best practices is available in English)
http://undb.jp/authorization/

2.2. Publications and Pamphlets

1) Living in harmony with nature - The National Biodiversity Strategy of Japan 2012-2020 (English)
http://www.env.go.jp/en/wpaper/
2) Annual Report on the Environment, the Sound Material-Cycle Society and the Biodiversity in Japan (English)
http://www.env.go.jp/en/wpaper/

2.3. Database

1) Website of the Biodiversity Center of Japan, Nature Conservation Bureau, Ministry of the Environment (English)
http://www.biodic.go.jp/index_e.html

2.4. Reports Submitted to Other Conventions and Forums, etc.

1) National Report on the Implementation of the Ramsar Convention on Wetlands (COP11)
http://www.ramsar.org/pdf/cop11/nr/cop11-nr-japan.pdf

(Reference) Results of Sorting out the Baselines

The baselines specified in the Key Action Goals B-1-1, C-1-1 and D-2-1 and the results of sorting out the current status are as follows.

National Target: B-1 Significantly reduce the rate of loss of natural habitats, as well as their degradation and fragmentation, by 2020
Key Action Goal B-1-1 Establish methods and standard values to serve as baselines designed to determine the rate of loss of natural habitats and their state of degradation and fragmentation, as well as sorting out their current status, so that effective action can be launched by the midterm review of the Aichi Biodiversity Targets that is scheduled for 2014 or early in 2015 (MOE, MAFF)

Basic concepts

In consideration of the compilation of data that is available on a continuous basis, the basic understanding will be developed using the forest area, the area of lakes and marshes, the reclamation area of shallow marine waters and the area of the extension of the natural coastline. The standard values are the values for 2010 when the Aichi Biodiversity Targets were set or the values for the most recent year before 2010. Concerning items with yearly variations, the average values for the five years up to 2010 will be applied.

The Japan Biodiversity Outlook announced by the Ministry of the Environment in 2010 shows that biodiversity loss has been particularly extensive in inland water ecosystems, coastal/marine ecosystems and island ecosystems, and it is considered that this loss is still continuing. However, due to the limited availability of the data by which the latest status can be evaluated on a national level, it is necessary to proceed with this evaluation according to the status of future data accumulation. The contents of the data will be re-examined as necessary.

Baselines and Current Status

- Forest area: 25,100,000 ha in 2007
  (Natural forest: 13,380,000 ha, Planned forest: 10,350,000 ha, Treeless land: 1,210,000 ha, Bamboo Grove: 160,000 ha)
  In recent years, the forest area has remained stable without much variation.
- Area of lakes and marshes: 2,356.61 km2 in 2010
- Reclamation area of shallow marine waters:
  The average annual total area of reclamation for the five years from 2006 until 2010 was about 7 km2.
  The area of reclamation has been decreasing after the peak at about 50 km2 per year around 1975.
- Extension of the natural coastline:
  The annual average for the five years from 2006 until 2010 is estimated at 18,105 km (estimation made by the Ministry of the Environment)

National Target: C-1 Appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas, by 2020.
Key Action Goal C-1-1 Set in place methods and baselines for determining the status of conservation and management, as well as their present status, by the midterm review for the Aichi Biodiversity Targets which are scheduled to be held in 2014 or early in 2015 (MOE, MAFF).

Basic concepts

The definition of "protected areas" subject to "appropriate conservation and management" are as follows by dividing them between "inland areas and inland water areas" and "coastal and marine areas" in the light of the differences of the systems between land and marine areas.

The definition and subject areas of protected areas (marine protected areas) under "coastal and marine areas" were acknowledged by the Headquarters for Ocean Policy in 2011. The definition of protected areas will be re-examined as necessary, and re-examination will also be carried out for the areas designated as "appropriately conserved and managed areas."

○Inland areas and inland water areas

Areas clearly designated and managed under laws or by other effective means, aimed at the conservation of biodiversity and the sustainable use of ecosystem services.

○Coastal and marine areas

Areas clearly designated and managed under laws or by other effective means, in consideration of the modalities, aimed at the conservation of biodiversity supporting the sound structure and functions of marine ecosystems and the sustainable use of ecosystem services.

Baselines and Current Status

The baseline is FY2011 as the beginning year, and computation of the current values will be made by using data for FY2013 or the latest available data.

The area subject to protection is as follows.

○Inland areas and inland water areas

Baseline: About 76,800 km2, or about 20.3% of the country's land area (377,950 km2)
Check values: Same as the baseline
(The estimation will be made based on areas where geographical information is available and will exclude any duplication: Natural Parks, Nature Conservation Areas, Wildlife Protection Areas, Natural Habitat Conservation Areas, Protected Forest, and Green Corridors)

○Coastal and marine areas

Baseline: About 369,200 km2, or about 8.3% of the area of Japan's territorial waters and exclusive economic zone (EEZ) (about 44,470,000 km2)
Check values: Same as the baseline
(The estimation will be made based on areas where geographical information is available and will exclude any duplication: Natural Parks, Nature Conservation Areas, Wildlife Protection Areas, Protected Water Surface, Zones for Common Fishery Groups, Development Areas for Coastal Marine Resources, and Designated Areas of the Sea)

Areas that Fall under Protected Areas

Areas subject to the designation of "protected areas" are divided into the following categories. The subject areas will be re-examined as necessary. In addition, World Natural Heritage Sites, Ramsar Convention wetland sites (coastal and marine areas) and Biosphere Reserves (UNESCO-MAB Biosphere Reserve) are not subject to area calculation since measures to guarantee their protection have been taken under the following systems although they meet the purpose of protected areas.

○Inland areas and inland water areas

Natural Parks (Natural Parks Law): National Parks, Quasi National Parks, and Prefectural Natural Parks,
Natural Coastal Protected Zone (Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea)
Nature Conservation Areas (Nature Conservation Law): Wilderness Areas, Nature Conservation Areas, and Prefectural Nature Conservation Areas
Wildlife Protection Areas (Wildlife Protection and Hunting Management Law)
Natural Habitat Conservation Areas (Law for the Conservation of Endangered Species of Wild Fauna and Flora)
Suburban Special Green Conservation Areas (Law for the Conservation of Green Belts around the National Capital Region, and Law for the Development of Conservation Areas in the Kinki Region)
Special Green Conservation Areas (Urban Green Space Conservation Act)
Protected Forests (Law on the Administration and Management of National Forests)
Green Corridors (Law on the Administration and Management of National Forests)
Natural Monuments (Act on Protection of Cultural Properties)
Other protected areas that prefectures specify through ordinances

○Coastal and marine areas

"Marine Protected Areas" acknowledged by the Headquarters for Ocean Policy
Natural Parks (Natural Parks Law)
Natural Coastal Protected Zone (Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea)
Nature Conservation Areas (Nature Conservation Law)
Wildlife Protection Areas (Wildlife Protection and Hunting Management Law)
Natural Habitat Conservation Areas (Law for the Conservation of Endangered Species of Wild Fauna and Flora)
Natural Monuments (Act on Protection of Cultural Properties)
Protected Water Surfaces (Act on the Protection of Fishery Resources)
Development Areas for Coastal Marine Resources and Designated Area of the Sea (Marine Fishery Resources Development Promotion Law)
Various Designated Areas of the Sea by prefectures and fishermen's organizations (various systems on which they are based)
Zones for Common Fishery Groups (Fisheries Act)

National Target: D-2 Strengthen the contributions of biodiversity to resilience of ecosystem and their storage of carbon dioxide by conserving and restoring ecosystems, including restoration of at least 15% or greater for degraded ecosystems, thereby contributing to climate change mitigation and adaptation by 2020.
Key Action Goal D-2-1 Establish methods and standard values to serve as baselines designed to understand the status of conservation and restoration of ecosystems, as well as sorting out their current status, by the midterm review of the Aichi Biodiversity Targets that are scheduled for 2014 or early in 2015 (MOE, MAFF).

Basic concepts

The conservation status of ecosystems will be elucidated through changes in the forested area, and the conservation of ecosystems and their recovery status will be assessed by the total area of seagrass beds/tidal flats and the level of achievement of environmental water quality standards. Categorization will be made according to changes in the area of forest, the total area of conservation/development and restoration of seagrass beds/tidal flats and the average value of level of achievement of environmental standards over five years concerning water quality.

The Japan Biodiversity Outlook announced by the Ministry of Environment in 2010 shows that the loss of biodiversity has been substantial, particularly in inland water ecosystems, coastal/marine ecosystems, and island ecosystems, and it is considered that this loss is still continuing. However, due to the limited availability of data by which latest status can be evaluated on a national level, it is necessary to proceed with this evaluation according to the status of future data accumulation. Also, the contents of the data will be re-examined as necessary.

Baselines and Current Status

- Forest area: The area has been stable at about 25,000,000 ha, and was 25,100,000 ha in 2007.
- Area of seagrass beds/tidal flats:
  The area was reduced by about 71,000 ha over the past 20 years and has become about 192,000 ha from about 263,000 ha around 1978. However, about 22,000 ha were conserved and developed and restored by 2012, which accounts for over 15% of the amount of the decrease during this period.
- Level of achievement of the environmental water quality standards
  Biochemical oxygen demand (BOD) of rivers: From over 50% in the 1970s to over 90% on average between 2006 and 2010
  Total nitrogen and total phosphorous of lakes and marshes: From about 40% in the late 1980s to about 50% or less on average between 2006 and 2010
  Total nitrogen and total phosphorous of ocean areas: From over 50% in the late 1990s to over 80% on average between 2006 and 2010
  In this way, an improvement of over 15% has been achieved except for lakes and marshes.