

## (5) Wildlife Conservation and Management in Japan

### 5-1) Basic Policy and Strategy of Wildlife Conservation

#### a) Basic Concepts

Wild animals and plants serve as the basic components of ecosystems, and their diversity helps maintain the balance of the ecosystems. Japan is blessed with natural environmental variety, and despite being small, it is home to a large variety of wild plants and animals including endemic species. At present, however, a large number of animal and plant species in Japan are threatened. To maintain a diversity of wild animals and plants in Japan, we should, at the very least, avoid human extinction of any species or unique population/community. Not only should endangered and rare species be conserved, but a variety of fauna and flora, including ordinary species, established in the area should also be conserved in their totality. In utilising wild plants and animals as genetic resources, it is necessary to conserve their biological diversity by ensuring sustainable use of them. It is extremely significant from the viewpoint of conserving biological diversity to avoid, through appropriate management practices, ecosystem disturbance which is caused by a rapid increase in certain bird or mammal population.

#### b) Basic Strategy

In order to protect valuable wildlife, it is very important to protect their habitats, to regulate hunting and illegal poaching strictly and to implement necessary measures to preserve endangered species.

Japanese wildlife protection system has made it possible to conserve wildlife by enforcing the Wildlife Protection and Hunting Law, and the Law for the Conservation of Endangered Species of Wild Fauna and Flora.

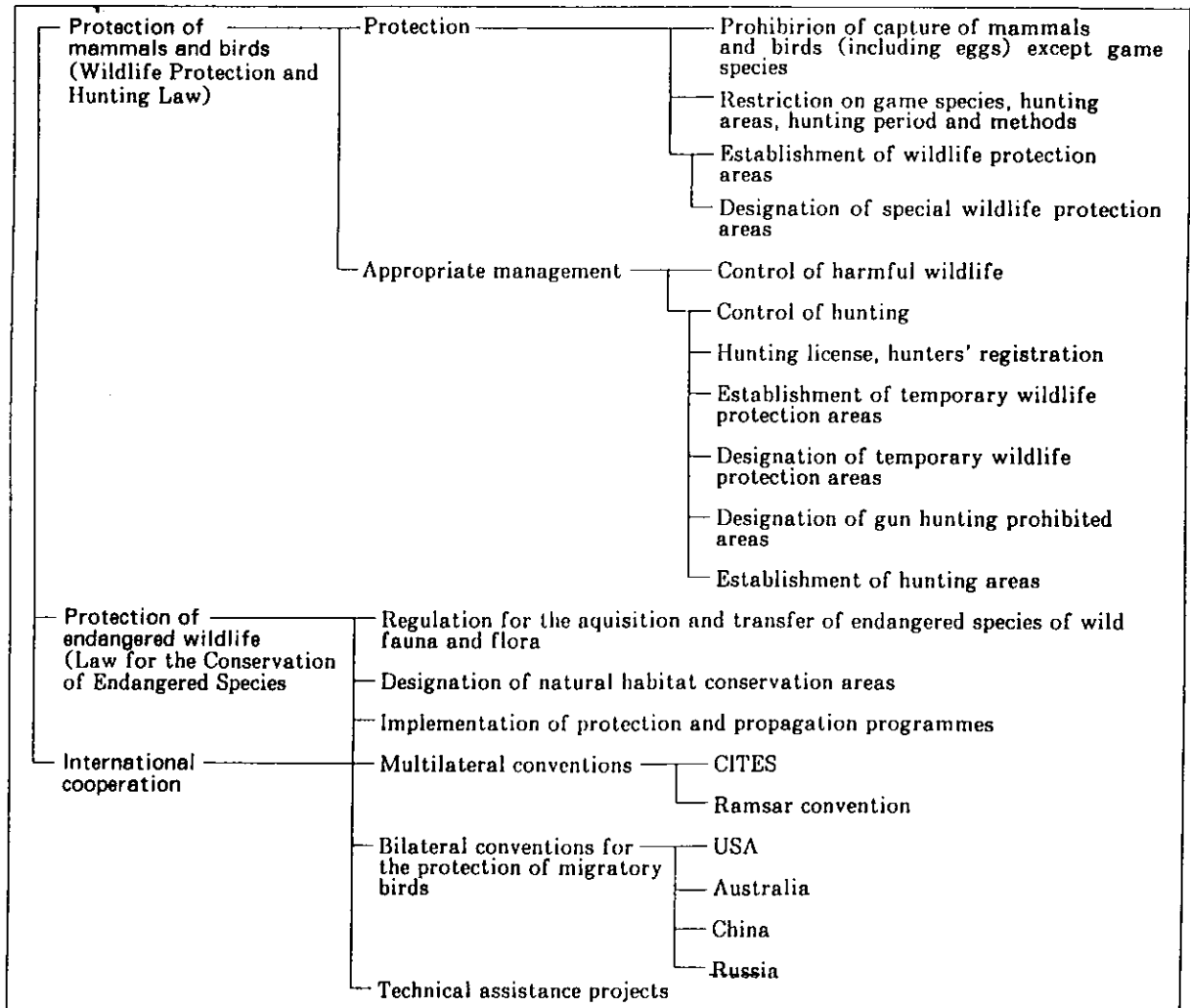
Council of Ministers for Global Environmental Conservation, Government of Japan (1995): National Strategy of Japan on Biological Diversity.

(<http://www.eic.or.jp/eanet/en/pol/nsj/index.html>)

Nature Conservation Bureau, The Environment Agency (1999): Nature Conservation in Japan

(5) Wildlife Conservation and Management in Japan 5-1) Basic Policy and Strategy of Wildlife Conservation

■ Wildlife protection system of Japan



Nature Conservation Bureau, The Environment Agency(1999) : Nature Conservation in Japan

## (5) Wildlife Conservation and Management in Japan

### 5-2) Hunting Systems

#### a) Introduction

In many countries, the first category of wildlife to be given protected species has usually been the birds and mammals because of their position at the top of the food chain in local ecosystems, as well as for importance as a hunting resource for people. In Japan, the basis for the wildlife conservation systems is the Wildlife Protection and Hunting Law, established for regulation of hunting and conservation of the animals' habitat. At present, all wild bird and most species of mammals inhabiting the country are covered under this comprehensive law.

#### b) Outlines of Wildlife Protection Systems

The Wildlife Protection and Hunting Law has three objectives: protection of birds and mammals, prevention of damage caused by birds and mammals and prevention of hunting hazards. Through such measures as by regulating the capture, transfer, breeding and export/import of these animals and development activities in their habitats.

#### c) Regulation of Capturing

##### 1) Birds and mammals for hunting

Under the Wildlife Protection and Hunting Law, birds and mammals living in the country are classified into two categories: game species, for hunting; and protected species, of which the capture, injuring and killing are prohibited. At present, there are 30 bird species and 17 mammal species designated as game animals. Those species are basically as follows:

- The species' habitat is intact and the population can withstand hunting pressure reasonably well.
- Species considered harmful to agriculture and forestry.
- Species whose fur, meat and other derivatives has usage value.

##### 2) Hunting licences

There is a wide range of regulations covering hunting activities designed to prevent overhunting and hunting accidents. Anyone wishing to hunt is required to obtain a hunting licence through an examination process undertaken by the Prefecture concerned. There are three classes of the hunting licences: for nets/traps, shotguns/rifles and airguns respectively. At present, about 76,000 are in possession of a hunting licence, of which 87% are for shotguns/rifles.

##### 3) Hunting season

Hunting is allowed only in the hunting season, based not only on the breeding and migrating

seasonal considerations of the birds but agriculture, forestry and outdoor recreation seasons as well. The hunting season is principally from 1st October to 31st January in Hokkaido and from 15th November to 15th February in the rest of the country.

#### 4) Hunting areas

##### Wildlife Protection Areas

As mentioned above (see 4-5: Wildlife Protection Areas).

##### Hunting prohibited areas

Areas in which hunting is prohibited are Wildlife Protection Areas, National/Quasi-national Parks (Special Protection Zone), Wilderness Areas, Gun-hunting Prohibited Areas in urban vicinities and recreation areas, and Temporary Wildlife Protection Areas with a maximum limitation period of three years

#### 5) Changes in the pattern of hunting

In 1992, 2.93 million birds and 330,000 mammals were hunted. The number has been declining each year as the number of hunters declines.

#### 6) Special permission for capture

Exceptions are made for certain specific cases, such as for academic studies and control of species considered harmful, and the Director General of the Environment Agency or the Prefectural Governors grants a permit for the capture of birds.

#### 7) Control of harmful animals

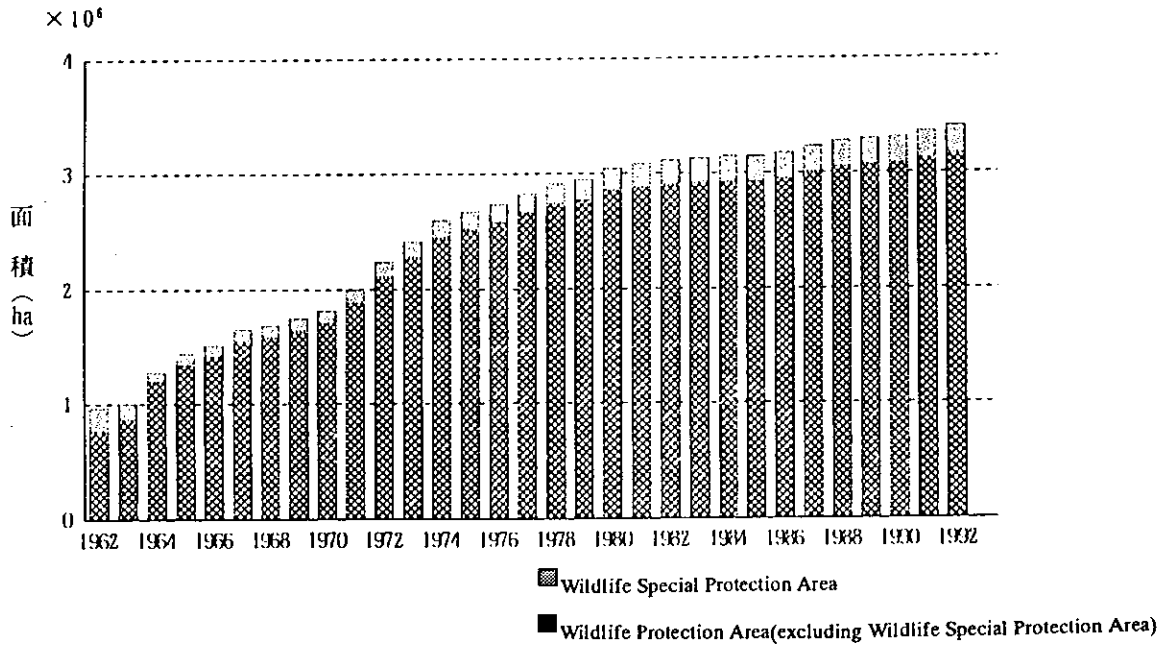
Damage to agricultural crops, forestry resources or even harm to people can sometimes be caused by wild animals, and in these cases pest control measures are one of the measures taken. This control is implemented regardless the hunting regulations, such as the issue of special hunting permission, season and areas. This form of control however is necessarily managed under security guidelines that ensure that the species is not overhunted or hunted within the boundaries of a Wildlife Protection Area.

#### 8) Current changes

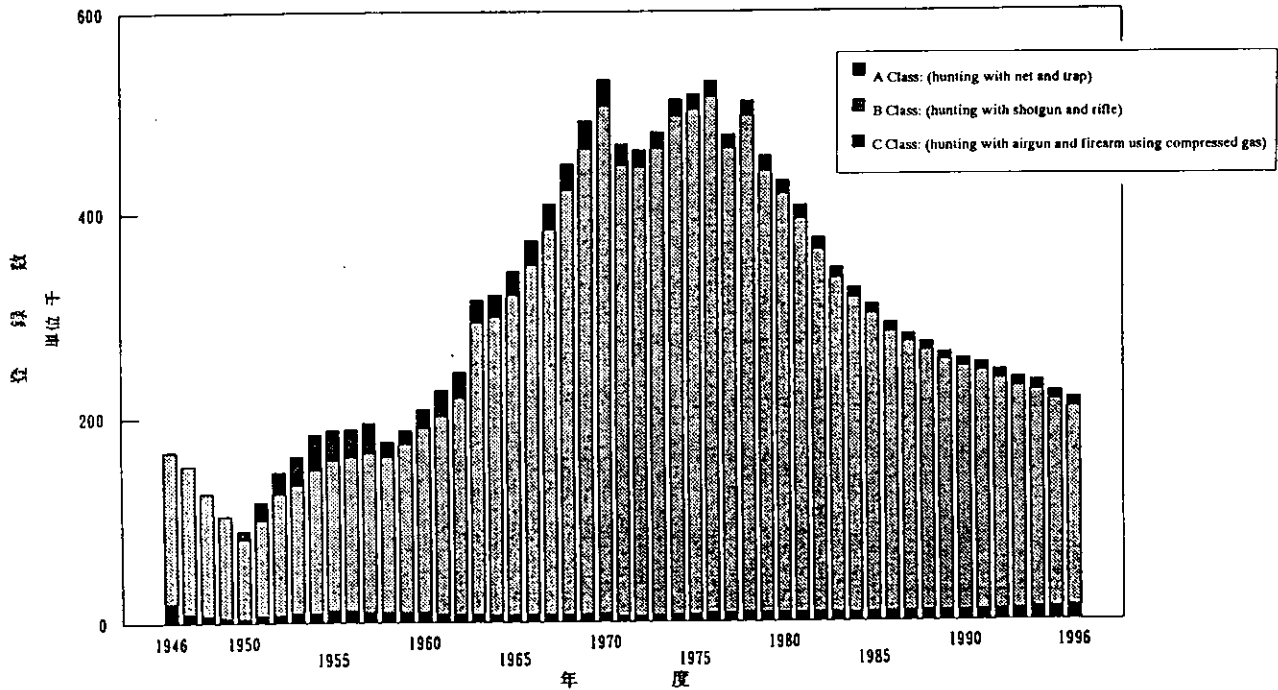
In 1992, the number of animals controlled was 1.28 million birds and 100,000 mammals. The number has since been increasing due to a rise in incidence damages to agriculture crops and forestry products specifically by deer, wild boars, monkeys and crows.

(5) Wildlife Conservation and Management in Japan 5-2) Hunting Systems

a) Changes of the Area for Wildlife Protection Area and Wildlife Special Protection Area



b) Changes of the Number of Registered Person for Hunting



水谷 知生 (1996) : 野生動物の保護制度に関する一考察、ワイルドライフ・フォーラム 2 (3)、野生生物保護学会

高橋 正浩 (1998) : 狩猟鳥獣の捕獲を禁止、制限する件の変更について、野生生物保護行政、野生生物保護行研究会

(5) Wildlife Conservation and Management in Japan

5-3) Conservation of Endangered Species (Law for Conservation of Endangered Species of Wild Fauna and Flora)

a) Law for Conservation of Endangered Species of Wild Fauna and Flora

Recognising the importance of species of wild fauna and flora, as well as having essential value for humanity, the Law for the Conservation of Endangered Species of Wild Fauna and Flora aims to ensure the conservation of endangered species of wild fauna and flora, and contribute to the conservation of natural surrounding for present and future generations.

b) Definition

Endangered species known to exist in Japan are designated as National Endangered Species (NES) and the species that are listed in CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendix 1 or in Japan's bilateral convention or agreement with neighbour countries are designated as International Endangered Species (IES).

c) Prohibition on Acquisition and Transfer of Endangered species

Hunting, gathering, killing or damaging of live NES is prohibited unless the Director General of the Environment Agency permits for the specific purposes. And transfer of organisms of Endangered Species including processed intact organisms, parts and processed parts either on a commercial or non-commercial basis, is prohibited except when the Director General of the Environment Agency permits transfer for the specific purposes.

International trading of organisms and others of NES is prohibited either on a commercial as well as non-commercial basis except in the case that conditions adopted by the Government have been fulfilled.

d) Regulation on Transfer of Parts IES (International Endangered Species)

Those who intend to transfer non-processed parts of designated parts in Japan must first register the parts. Registration can be made, if

the parts have been produced from domesticated or cultivated animals or plants or obtained before CITES measures were imposed.

Without registration, transfer is allowed only if the Director General of the Environment Agency permits the transfer for the specific purpose.

e) Habitat Conservation

The natural habitats of NES are designated by the Director General of the Environment

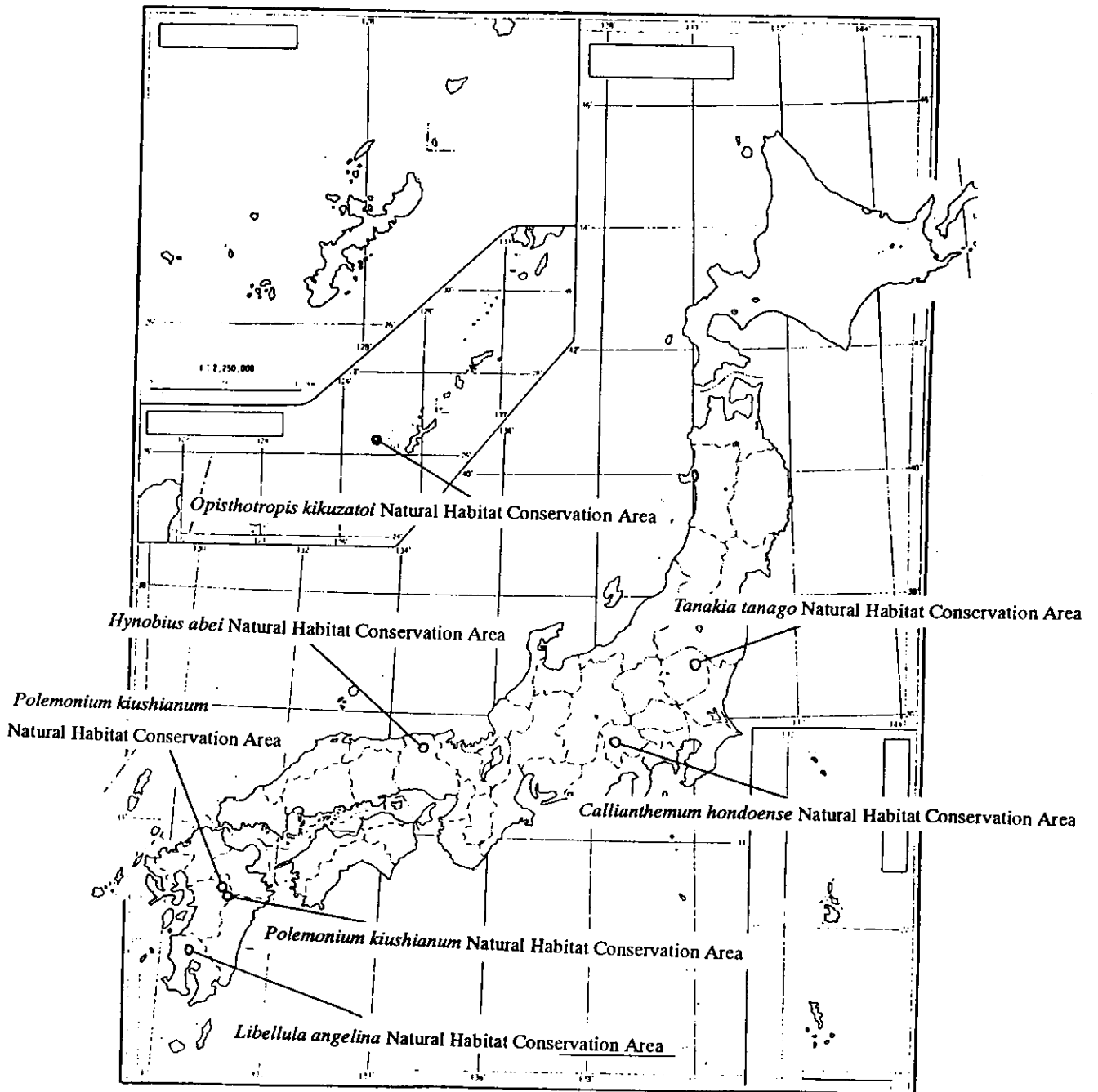
Agency as Natural Habitat Conservation Areas. This area is classified into two types of zones. One type is a Protection zone. In this zone, certain activities such as construction or cutting trees are regulated by the Director General of the Environment Agency. Another type is a monitoring zone, which functions as a buffer zone.

f) Rehabilitation of Natural Habitats and Recovery of a Viable Population

Since the stable survival of Endangered Species may not be achieved by the regulations on acquisition and transfer of each organism and human activities in their natural habitat alone, the Government may promote the rehabilitation of natural habitats and the recovery of viable populations of National Endangered Species. The Environment Agency will establish a programme promoting the rehabilitation of natural habitats and maintenance of viable populations in cooperation with other Ministries and Agencies. The programme may be implemented by the Environment Agency or other Ministries or Agencies, Local Government and NGOs if appropriate.

(5) Wildlife Conservation and Management in Japan 5-3) Conservation of Endangered Species ( Law for Conservation of Endangered Species of Wild Fauna and Flora)

Location of Natural Habitat Conservation Area



柴田 泰邦 (1998) :生息地等保護区の指定について、野生生物保護行政、野生生物保護行政研究会



## (5) Wildlife Conservation and Management in Japan

### 5-4) Wildlife Conservation and Management by Other Systems

#### a) Wildlife Protection by Natural Monument System

The natural monument system aims to protect the diverse wildlife in Japan at all levels-species, community, ecosystem-as academically valuable nature. The natural monument system serves to commemorate nature in Japan and protect the natural assets, which are the setting for the indigenous culture of the nation. National monuments, designated by taking into consideration the climatic zones and different forest and vegetation types, as well as secondary nature made by man, play an enormous role in the protection of biological diversity in Japan.

The natural monument system is generally known among the public because of its long history, and is expected to continue to provide positive results in the protection of biological diversity. Its systematic designation of natural monuments which include not only birds and mammals and endangered species, but creatures other than birds and mammals, and the various vegetation and ecosystems should prove to further the protection of biological diversity.

To thoroughly implement the protection and management of designated national monuments, efforts should be made to establish effective protection and management measures through the establishment of technological systems rooted in conservation biology and collaborative efforts between relevant local and national organisations.

#### b) Protection and Management of Forest Wildlife in National Forest

Efforts should be implemented to protect wildlife in national forests by promoting appropriate forestry operations taking account of the maintenance and formation of natural environments such as the conservation of habitats of wild animals and plants, grasping situation of wild animals and plants through patrols carried out by district forest office staffs such as forest rangers, preventing forest damage such as forest fires and guiding visitors into the forests. Illegal actions in national forests such as illegal hunting and stealing of alpine vegetation will be kept under control by judicial police officials in accordance with the “Law Concerning Temporary Measures for the Designation of Judicial Police Officials, Etc.”

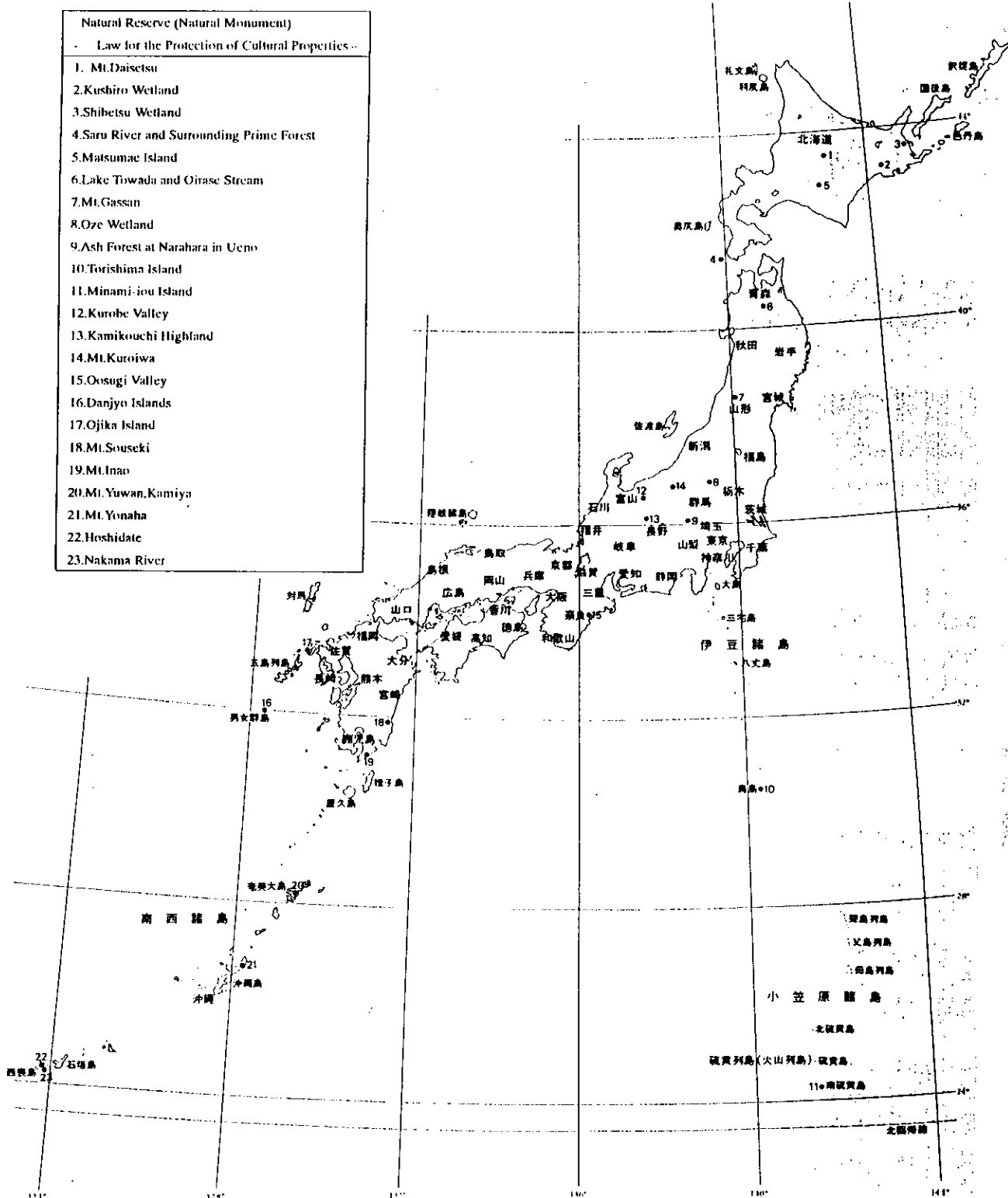
The protection and breeding of wild animals and plants which require special protection should be implemented by appropriate protection and management measures in Nature Conservation Forests and Protected Forests. The “Programme for Protection and Management of Rare Species of Wild Fauna and Flora” should be applied to rare species of wild fauna and flora such as designated by the “Law for the Conservation of Endangered Species of Wild Fauna and Flora”. Activities carried out under the programme include patrols for the protection and

conservation of the individuals, research on protection and management methods of forests required for the maintenance and establishment of habitats, maintenance and establishment of habitats, and measures required for the protection of other rare animal and plant species.

Council of Ministers for Global Environmental Conservation, Government of Japan (1995):  
National Strategy of Japan on Biological Diversity.  
(<http://www.eic.or.jp/eanet/en/pol/nsj/index.html>)

(5) Wildlife Conservation and Management in Japan

5-4) Wildlife Conservation and Management by Other Systems



加藤 陸奥雄 他編 (1984) : 日本の天然記念物

## (5) Wildlife Conservation and Management in Japan

### 5-5) Research and Monitoring

#### 5-5-1) National Survey on the Natural Environment

##### a) Outline of the Survey

The Environment Agency, in compliance with the Nature Conservation Law of 1972, undertakes the National Surveys on the Natural Environment once every five years. The survey is popularly known as the Green Census, which covers topography, geology, fauna and flora, typical natural landscapes, etc.

Development activities caused by urbanisation coupled with economic growth continuously put pressure on natural landscape as well as biosphere. Thus it should be necessary to be reviewed the state of natural environment at comparatively short intervals. The First Survey on the Natural Environment was carried out in 1973, the Second in 1978/1979, the Third in 1983 to 1987, the fourth in 1988 to 1992, the Fifth in 1993 to 1998 and the Sixth begun from 1999.

The results of the Green Census provide important and essential database for elaboration of nature conservation policies in Japan. For instance, most of the survey results are kept in magnetic tapes for data base, and are utilised for drawing up some of the national plannings related to nature conservation, such as National Land Use Plan, National Development Plan and National Parks Management Plan.

#### National Surveys on the Natural Environment (Nature Conservation Law ; Article 13)

The Law stipulates that basic surveys be made on topography, geology, fauna and flora, and wildlife almost once every five years, with the view of obtaining basic data necessary for the planning of measures to be taken for nature conservation.

##### b) Survey Objectives

Main objectives of the Survey are as follows:

to collect information on the present state of Japanese natural environment throughout the country;

to analyse the long-term change of the natural environment by accumulating the results of the Survey carried out every five years;

to utilise the results of the Survey for policy development on nature and natural resources conservation and management in Japan.

##### a) Utilisation of Data

For the purpose of appropriate and efficient utilisation of large amount of environmental information obtained by periodical Green Census surveys, the Environment Agency established environmental information data bank and system for its use.

Since analysing and summing up the survey results of the First Green Census, the Agency has kept such results in magnetic tapes for data base files through replacing the results with numeral or symbolic data. This database is made use of analysis works in the field of governmental and local administration and of research, as fundamental data for drawing up various planning, etc.

In addition, the results of the surveys themselves are printed as several types of publication and are opened to the public, which can be purchased by anybody.

#### 1) Analysing

The database of the results of the survey is utilised for various analysing works by:

cross analysis within Green Census data, or;

cross analysis between Green Census and another numeric database such as National Land Numeral Information, Meteorological Information, etc.

These analysing results together with publication and maps are also made use of various planning works especially at the national and prefectural level, i.e. National Land Use Plan, National Development Plan, National or Quasi-national Parks Management Plan, etc. In addition, the results become very important materials for Environment Impact Assessment.

#### 2) Publication

The results of the Survey have been published in the form of reports and maps.

The First Survey

- Comprehensive report: Report on the national survey of the natural environment, 1976
- Map: Actual vegetation map (1/200,000), 1975 and 1976, 53 sheets.

The Second Survey

- Reports on each survey (prefectural or/and national level).
- Comprehensive report: Report on the second national survey of the natural environment, 1983.
- Maps : Wildlife and plant distribution map (1/200,000), 1981, 53 sheets  
: Actual vegetation map (1/50,000), 608 sheets

The Third Survey

- Reports on each survey (prefectural or/and national level).
- Comprehensive report: Report on the third national survey of the natural environment, 1989.
- Maps : Natural environment map (1/200,000), 1989, 53 sheets  
: Actual vegetation map (1/50,000), 685 sheets

- List of plants in Japan, 1987
- The Fourth Survey
- Reports on each survey (Big tree survey, Lake and marsh survey).
  - Comprehensive report: Report on the fourth national survey of the natural environment, in print.
  - Maps : Natural environment map (1/200,000), in print,53 sheets
    - : Distribution map of coral reefs (1/100,000), 1996, 4 sheets
- The Fifth Survey
- Reports on each survey (Big tree survey, Lake and marsh survey).
  - Comprehensive report: Report on the fourth national survey of the natural environment, in print.
  - Maps : Natural environment map (1/200,000), in print,53 sheets
    - : Distribution map of coral reefs (1/100,000), 1996, 4 sheets

Japan International Cooperation Agency (JICA) (1999): Textbook for the Group Training Course in Nature Conservation and Natural Parks Management, FY99, Basic Policies  
 Nature Conservation Bureau, The Environment Agency (1999): Nature Conservation in Japan  
 Nature Conservation Bureau, The Environment Agency (1995): Aspect of Nature

(5) Wildlife Conservation and Management in Japan 5-5) Research and Monitoring  
5-5-1) National Survey on the Natural Environment

**Outline of The Fifth National Survey on the Natural Environment**

The Fifth National Survey on the Natural Environment (1993-1998)

Survey	Outline
Vegetation survey	As in the fourth survey, effective survey is to be carried out to obtain nationwide present state of vegetation, utilizing satellite pictures via Landsat, etc.
Specific plant communities survey	Among plant communities in Japan, survey is to be carried out to obtain information of important plant communities such as those of scientific values and those requiring protection in terms of their habitats and growing conditions. In the third survey, monitoring and selecting surveys were carried out on 5,085 selected plant communities. In the fifth survey, further monitoring surveys are to be conducted in order to grasp their conditions after the third survey.
Environmental indicator species survey	With participation and cooperation of volunteer citizens, survey is to be carried out on the condition of distribution of popular and familiar animals and plants. Survey species indicate and represent state of nature. Upon implementing the survey, efforts will be made to improve exactness and efficiency of the survey. Additionally, transition trend of distribution is to be surveyed for species with particularly significant environmental indices among those studied in the fourth survey.
River survey	Survey is to be conducted on the 113 rivers nation-wide, mainly main streams of the first class rivers designated by the Ministry of Construction, surveyed in the third survey to grasp the artificial modification on the rivers, the state of fish species.
Wetland survey	Marshes at inland are to be surveyed, which form important ecosystems as diverse and unique habitats of animals and plants, being contact points of waters and lands in order to grasp the distribution and present conditions of marshes in Japan.
Typical ecosystem survey	General and detailed survey is to be carried out again on the areas monitored in the fourth survey as well as on some additional areas in terms of vegetation, fauna, topography, geology, meteorology, land utilization, etc. in order to accumulate basic data for grasping the characteristics of the ecosystems which differ in the natural environment and degrees of human disturbances.

The Biodiversity Survey

Survey	Outline
Biological diversity survey (Species diversity survey)	Survey is to be carried out in order to grasp the distribution of wild animals and plants in Japan, while more detailed survey is to be carried out about living conditions particularly on rare and endangered species.
Biological diversity survey (Ecosystem diversity survey)	Concerning areas where Japan's representative type of ecosystem is existing, the ecosystem is to be investigated through components species in the ecosystem and its structure.
Biological diversity survey (Genetic diversity survey)	This survey is prosecuted for animal and plant species which have comparatively distinct genetic variations among regional populations. Its primary purposes are, as a case study, to find out the distribution, morphological characteristics, and genetic variations of each regional population and to develop techniques for general survey concerning genetic diversity in the future.

Japan International Cooperation Agency (JICA) (1999) : Textbook for the Group Training Course in Nature Conservation and Natural Parks Management, FY99, "Basic Policies"

## (5) Wildlife Conservation and Management in Japan

### 5-5) Research and Monitoring

#### 5-5-2) Research for Identification and Review of Endangered Species

##### a) Research Objectives

With the view to establishing a full picture of the species under threat of extinction and to increase public awareness of this threat, in 1986 the Environment Agency launched a study to identify those species of animal and plant requiring urgent conservation measures. In 1991, the results of this survey were compiled into the 'Red Data Book, Threatened Fauna and Flora in Japan: Vertebrates and Invertebrates'. However, because of the new IUCN categories for threatened species, a review of the contents has become necessary to include more up to date information on the species' and changes in habitat conditions, and in 1995, the Environment Agency began review of the animal phyla, mammals, birds, reptiles, amphibians and fish.

##### b) Methodologies for Research

For the review work, a Committee for Identification and Evaluation of Threatened Species of Wild Fauna and Flora, was established under the Nature Conservation Bureau in the Environment Agency and working groups for revision of the Red Data Book under this committee.

##### c) Identification of Species to be Listed

Based on the new IUCN categories, new ranks for threatened species were defined as follows:

- Extinct: species believed to have become extinct in Japan;
- Extinct in the wild: species existing only in captive breeding or cultivation;
- Threatened (I): critically endangered or endangered species;
- Threatened (II): vulnerable species;
- Near threatened: species existing on a fragile basis;
- Insufficient Data;
- Locally threatened populations (as an appendix).

##### d) Identification Results

Total 245 species were identified as threatened species: 47 species of mammals, 90 species of birds, 18 species of reptiles, 14 species of amphibians and 76 species of freshwater fishes.

##### e) Conservation Measures in the Future



The results of this review work will be published and distributed to central and local government offices concerned, to encourage these offices to incorporate consideration of threatened species in planning programmes. For critically endangered species, further detailed research on their condition in the wild will be carried out and the case for designation as 'National Endangered Species' will be examined based on the Endangered Species Law.

自然保護年鑑編集委員会 編（1989）緊急に保護を要する動植物の種の選定調査、自然保護年鑑 2、日生社

(5) Wildlife Conservation and Management in Japan 5-5) Research and Monitoring  
5-5-2) Research for Identification and Review of Endangered Species

Number of Japanese Taxa Listed in the Red Data Book of Japan  
Based on New Categories

	Known Japanese Taxa	Extinct (EX)	Extinct in the Wild (EX)	Threatened			Near Threatened (NT)	Data Deficient (DD)	Number of Threatened Taxa
				Critically Endangered and Endangered (CR)	Endangered (EN)	Vulnerable (VU)			
Mammals	app. 200	4	0	11	31	16	16	9	47
Birds	app. 700	13	1	17	42	48	16	15	90
Reptiles	97	0	0	2	7	11	9	1	18
Amphibians	64	0	0	1	5	9	5	0	14
Brackish & Freshwater Fishes	app. 300	3	0	29	58	18	12	5	76
Vascular Plants	7,087	17	12	471	881	518	108	365	1,399
Bryophytes	app. 1,800	0	0		110	70	4	54	180
Algae	app. 5,500	5	2		34	6	24	0	40
Lichenes	app. 1,000	3	0		22	23	17	17	45
Fungi	app. 16,500	28	1		51	11	0	0	62
V e r t e b r a t e									
P l a n t s									

(5) Wildlife Conservation and Management in Japan

5-6) Rehabilitation and Maintenance Programme

To prevent extinction of wildlife species, programmes for rehabilitation of natural habitats and maintenance of viable populations should be implemented timely, aptly and pursued actively as the need arises. The Endangered Species Law stipulates that programmes are to be promoted not only by the Environment Agency but also in cooperation with many partners, such as the government offices concerned, local public offices and private organisations. In addition, provision of wildlife conservation centres to serve as base facilities has been initiated to comprehensively promote research and public awareness.

a) Iriomote cat

The Iriomote wildcat exists only on Iriomote Island, a part of Okinawa Prefecture, and the number is estimated at about 100. The Iriomote Wildlife Conservation Center was established in 1995 As a base for conservation measures being implemented such as monitoring surveys using remotely-controlled cameras and radio tracking; as well as ecological studies for pathology and parasitology; and public awareness programmes to reduce the incidence of road kills.

b) Tsushima cat

The Tsushima cat exists only on Tsushima Island, in Nagasaki Prefecture and the number is estimated to be less than 100; making it one of the most endangered species in Japan. The conservation measures being implemented include studies to assess the population, distribution and habitats through the use of questionnaires interviews, and observation of field signs; ecological and behavioural studies using radio tracking methods; and feeding and capturing for captive breeding. To serve as a base for these operations the Tsushima Wildlife Conservation Center began construction in 1997.

b) Blakiston's fish-owl

The Blakiston's fish-owl once ranged over all of Hokkaido but now is restricted to Eastern Hokkaido, with an estimated number of around 100. A DNA analysis for this species recently undertaken indicates that the population may be too small to be viable. As result conservation measures implemented in the form of feeding, installation of nestboxes, marking surveys, devising an action plan for pairing and breeding at Kushiro Wildlife Conservation Center. In February 1995, a rehabilitation/maintenance programme undertaken by Kushiro City was approved as the first programme based on the Endangered Species Law.

c) Japanese crane (Red-crowned crane)

Red-crowned cranes once ranged over all of Hokkaido but at one time declined to about 20 in number through over-hunting and development activities in their habitat. After that, the population increased mainly by feeding programmes conducted during winter and was counted at 598 in a comprehensive survey carried out in January 1996. A DNA analysis for this species recently undertaken shows very little difference between the population in Kushiro and that in China, but an extremely high degree in the blood relationship in the Kushiro population. The conservation measures implemented are aerial surveys for the population and distribution in the breeding season; general surveys and feeding during winter; and establishment of an action plan to increase the range of the species.

d) Short-tailed albatross

The Short-tailed albatross, the largest sea bird in the Northern Hemisphere, was once heavily hunted for its feathers and was once thought to be extinct. In 1951 however the species was rediscovered on Tori Island, one of the Izu Islands, and later in the Senkaku Islands in 1971. The present number is estimated at about 700. The conservation measures taken are improvements to their breeding sites, inducing the birds to move to selected safe nesting sites through use of decoys and satellite-tracking monitoring survey.

e) Japanese golden eagle

The Japanese golden eagle, a large largest raptorial bird at the top of the forest food chain, has been experiencing a declining breeding rate in recent years and the number is currently estimated at about 300. Conservation measures are translocation of a chick to a pair in Kyushu and studies to determine the factors impeding the breeding performance and mortality in the Western Japan.

f) Other Species

Surveys on the population, distribution and habitat, as well as habitat restoration programmes have been implemented for some other species: Abe's salamander *Hinobius abei* (Kyoto and Hyogo), a bitterling *Tanakia tanago* (Kanto District), Jacob's ladder *Polemonium kiushianum* (Mt. Aso) and some endemic plant species in Ogasawara Islands.

自然保護年鑑刊行会 (1996): 絶滅のおそれのある野生生物をどう守るか?、自然と共に生きる時代を目指して 自然保護年鑑4、日生社

(5) Wildlife Conservation and Management in Japan 5-6) Rehabilitation and Maintenance Programme

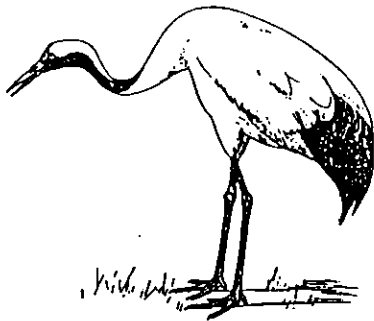
Blakiston's fish owl *Ketupa blakistoni*



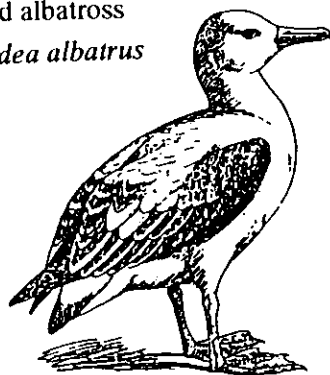
Golden eagle *Aquila chrysaetos*



Japanese crane *Grus japonensis*



Short-tailed albatross  
*Diomedea albatrus*



List of Wildlife Center	Location
Kushiro Wildlife Center (Blakiston's fish owl)	Kushiro, Hokkaido
Sado Wildlife Center (Japanese crested ibis <i>Nipponia nippon</i> )	Sado, Niigata
Iriomote Wildlife Center (Iriomote cat <i>Muyailurus iriomotensis</i> )	Iriomote island, Okinawa
Tsushima Wildlife Center (Tsushima cat <i>Felis euphilura</i> )	Kamiagata, Nagasaki
Haboro Wildlife Center / under construction (Guillemot <i>Uria aalge</i> )	Haboro, Hokkaido
Yambaru Wildlife Center / under construction (Okinawa rail <i>Rallus okinawae</i> , Pryer's woodpecker <i>Sapheopipo noguchii</i> )	Okinawa

自然保護年鑑刊行会 (1996) : 絶滅のおそれのある野生生物をどう守るか?、自然と共に生きる時代を目指して 自然保護年鑑4、日生社  
岡田 要 (1965) : 新日本動物図鑑、北隆館

## (5) Wildlife Conservation and Management in Japan

### 5-7) Changes to Vegetation and Restoration

Techniques are being gradually developed for each of the various environmental restoration requirements encountered across the country. In Ozegahara, for example, repeated trampling by hikers in to a degree far beyond the carrying capacity of the environment - stripped areas of the moorland of its vegetation. Since the situation was regarded as critical, and the natural restoration would take too long to take effect, a variety of plant species were managed to plant to accelerate the restoration process.

The swift destruction of vegetation and accompanying degradation of the natural habit is typically observed in volcanic eruptions. The sudden accumulation of ejecta and lava on the ground cancels the existing succession process of the vegetation which then has to rebuild itself for the beginning.

This phenomenon can be seen in all over Japan because of the numerous volcanoes throughout the country: Sakura Island, Mt. Fuji, Mt. Aso, Mt. Kirishima, Mt. Asama, Mt. Tokachi, Mt. Usu, Mt. Hugen, Mt. Toshima-komagatake, Mt. Showa-shinzan, etc. According to a study on the succession process on Mt. Toshima-komagatake that has been undergoing for more than 40 years, the succession in areas with no vegetation cover does not always follow a pattern from annual plants to perennial plants or from lichen, moss to higher plants. In fact, the reverse can happen: woody plants become established first, followed by lichen and moss. From this viewpoint, aerial dissemination of perennial and woody plants, such as wormwoods and alders, was carried out with helicopters on Mt. Usu covered with ejecta by the eruption.

In cases of human-induced disturbance on land, such as dam construction, restoration is undertaken with plant species that are effective in the early stages of planting: e.g. alders and locust tree. For poor land with little topsoil, it is important to cover the ground surface with such pioneer species even temporarily.

For coastal dunes and sandy beaches that have been stripped of vegetation, the restoration of vegetation cover is carried out in a way similar to that mentioned above. Reestablishment of coastal forest stands however, also requires that the sand dunes be stabilised, and the restoration process beginning with the planting of pioneer species followed by the rest of the succession 'set' species. In Erimo Promontory, the coastal vegetation has been developed in this manner for about 50 years; as a result, the fish catch has increased fourfold.

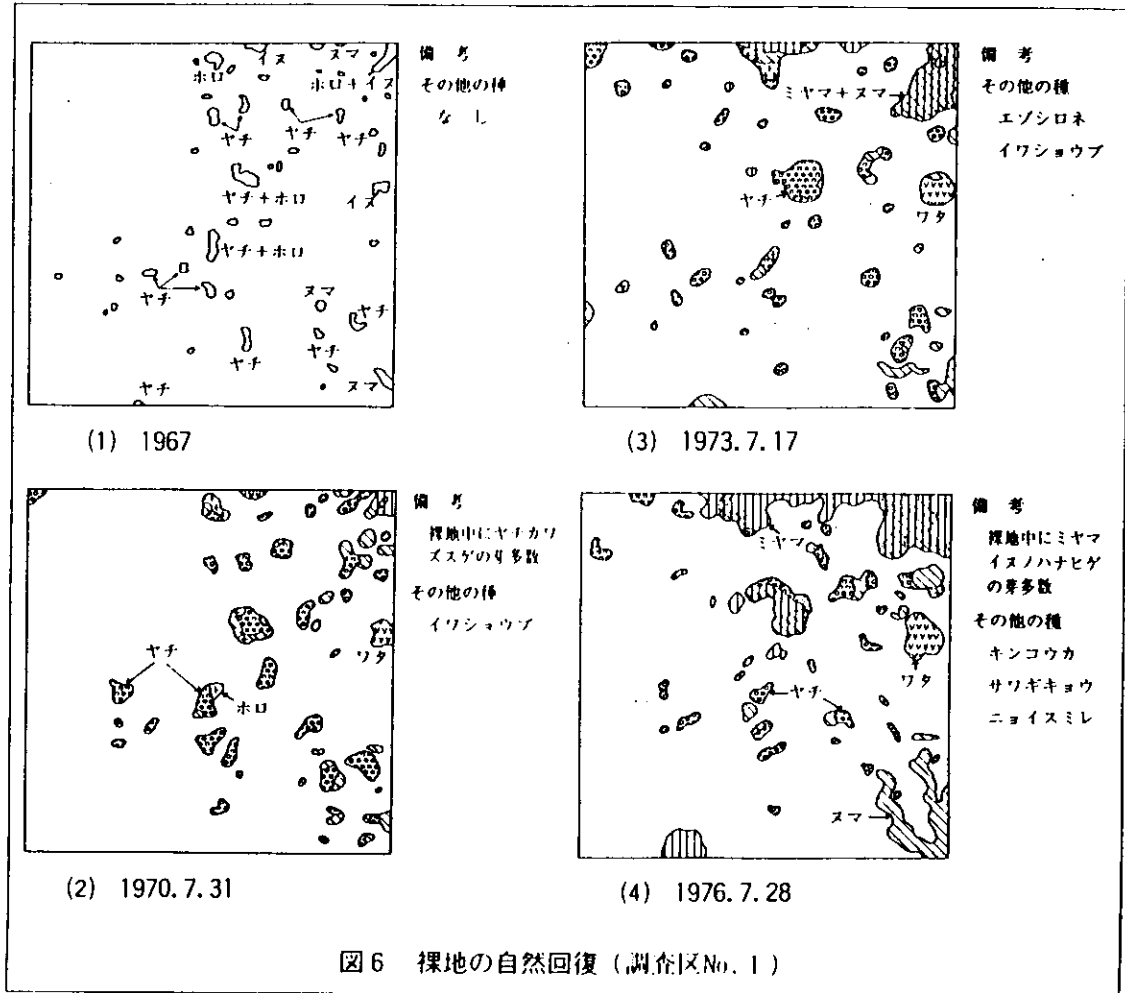
There are many examples which indicate the increase in fish catch in coastal areas following reestablishment of inland forests. In Lake Akkeshi, known for its oysters, experienced a steady decline in oyster production as a result of a drop in the water temperature in spring after

forests were lost along the Bekanbeushi River that flows into the lake. However, production went back on the increase after the forests were re-established through a pilot reforestation programme in the upper watershed area. Although the reforestation programme itself was for a different purpose, it nevertheless contributed to the conservation of ecosystems outside its range.

The succession of vegetation is also affected by animal communities from migratory locusts in grasslands to large herbivores in forests. Deer and serow often cause serious damage to trees, especially in years when their main food source of bamboo grasses is covered after heavy snows. On one small island in Lake Toya, in Hokkaido the isolated deer population there progressively ate up into local extinction species after species plant on the island in order of palate preference. Now the only plants left are those not normally eaten by deer. There are also many examples of the association between vegetation and domestic animals, and the effect the latter can have on the former. Koshimizu Flower Moorland is a beautiful coastal moorland on the Okhotsk Coast. The present moorlands were actually created by the grazing action of horses and cattle raised there over the years. Recently however, the area was designated as Abashiri Quasi-national Park, and the domestic livestock were removed and the controlled burning that also took used to take place was also halted. The result was a gradual invasion of other grass species that began to dominate the original grassland plant community. As a consequence, starting in 1995 restoration measures were commenced, beginning with the reintroduction of controlled burning and grazing on an experimental basis. Recently, the grasslands are showing signs of gradual recovery to their original state

(5) Wildlife Conservation and Management in Japan 5-7) Changes to Vegetation and Restoration

Example of natural recovery of vegetation in 2m×2m plot at bare area in Oze wetland.



The patches show growth of several grass species.  
For ten years, recovery is not proceeding well.

菊地 慶四郎 他 (1991): 永遠の尾瀬、自然とその保護、上毛新聞社



## (5) Wildlife Conservation and Management in Japan

### 5-8) Damage by and Coexistence with Wild Animals

#### a) Effect on Human Livelihood by Wild Animals

There are not so many opportunities for us to encounter wild animals in everyday life. In farming and mountain villages, however, damage to farm and forest products by deer and monkeys are serious problems. This trend has been increasing to the extent causing declines in productivity and resulting abandonment of farmlands. Crop damage by deer and wild boars has been an on-going struggle for farmers ever since the human race took up agriculture. More recently there are records of systematic control measures for these animal pests during the Tokugawa (Edo) period (1603 ~ 1868). Nowadays, the relationship between people and these animals has become even more problematic because of the vastly expanded and varied use of the land by people.

Bear number and habitats are declining in some areas because of increasing conflict with people. Capture and control of harmful birds and mammals have been implemented, however while the total number of problem animals caught has increased, so has the damage to crops. This indicates that much more effective measures for coexistence between conservation of wildlife and the agricultural and forestry communities need to be developed.

#### b) Case 1: Sika deer

At present, sika deer are animals causing the heaviest damage to agriculture and forestry. Deer damage in Tochigi Prefecture, mainly to forestry, is rapidly increasing. The deer are also ravaging the natural vegetation in Oku-Nikko, the core area of Nikko National Park. As a result, Tochigi Prefecture has established a conservation and management plan for sika deer aimed at coexistence between deer and people. The plan consists of three main objectives: to restore the balance in the natural ecosystem, to secure stability of agriculture and forestry operations, and to secure habitats for deer. The conservation measures taken are capture to maintain the population density at appropriate levels and monitoring surveys to determine the population dynamics, distribution, habitat condition, nutrition status and damage to vegetation. The survey results will reflect the effectiveness of the countermeasures.

In severe stricken areas, it is generally most important to base the implementation of deer management on ecological surveys of the population to determine their population, distribution, home ranges, habitats and damage to vegetation. Once the management objectives are established on the results of these surveys population control can be conducted by fencing, hunting or controlling the harmful animals.

c) Case 2: Asian black bear

Black bears have long been controlled by hunting and controlling the harmful animals because of such actions as scraping the bark off trees and other damage to forest products, and harm to people. As a result, in western Japan the population has shrunk in size and become endangered. The population in the Western Chugoku Mountains is around 250-300, and Hiroshima Prefecture is working towards coexistence between people and black bears by means of the following:

- Environmental restoration through reforestation of broadleaf trees in remote habitats;
- Establishment of facilities such as electric fences to prevent the damage;
- Maintenance of the population size by driving captured individuals to remote habitats;
- Public awareness activities directed at the local people.

It is necessary to the measures to conserve the local populations and prevent the damage by each area since the situations of damage and the population sizes are different even within the Western Japan.

Both the level and type of damage varies from area to area, even within western Japan, and thus management approaches for the conservation of black bear populations must be carefully examined area by area.

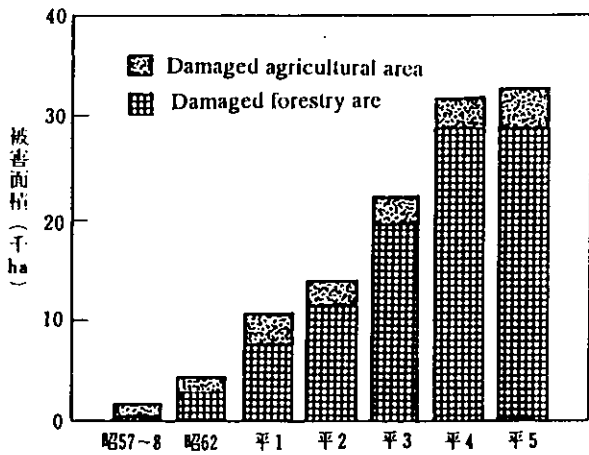
d) Coexistence with Wildlife

In conclusion, to examine the measures for coexistence of people and wild animals, it is important to understand the impact of wildlife populations on human existence as well as the animal population status, distribution, habitat condition and the ecology of the wildlife species. All these require a large amount of toil and long term monitoring if conservation efforts are to succeed

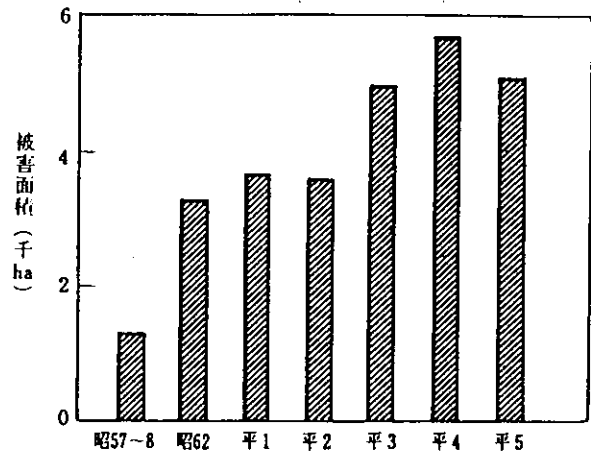
自然保護年鑑刊行会 (1996): 野生鳥獣との共存のために今何が必要か?、自然と共に生きる時代を目指して 自然保護年鑑4、日生社

(5) Wildlife Conservation and Management in Japan 5-8) Damage by and Coexistence with Wild Animals

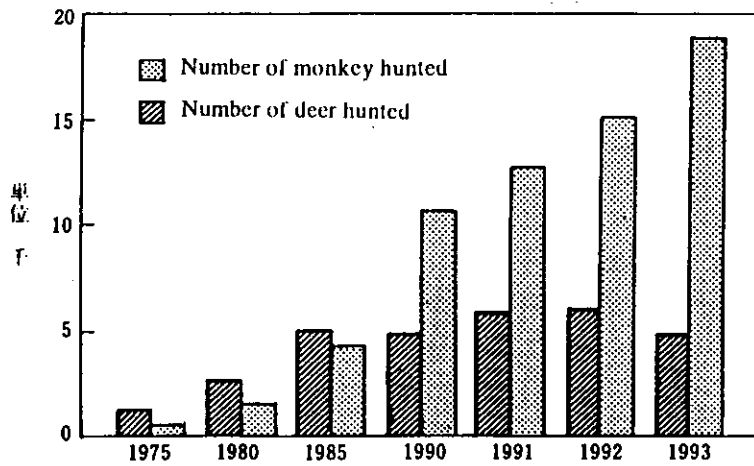
Agricultural and Forestry Damages by Deer



Agricultural Damages by Monkey



Pest (Problem Animal) Control of Deer and Monkey



自然保護年鑑刊行会 (1996) : 野生鳥獣との共存のために今何が必要か?、自然と共に生きる時代を目指して 自然保護年鑑4、日生社

(5) Wildlife Conservation and Management in Japan

5-9) Experiment by Local Government: Conservation and Management Plan for Yezo Deer in the Eastern Hokkaido

The Yezo deer, a subspecies of sika deer inhabiting Hokkaido, was once endangered by heavy snows and overhunting. Recently, thanks to conservation measures and favourable changes in their habitat, have not only increased in number but are expanding their range. As a result, damage to agriculture and forestry has also risen rapidly, and the amount of damage in 1996 totalled over JP¥ 5.0 billion, of which JP¥ 4.2 billion was in the Eastern Hokkaido alone. Damage to natural ecosystems has also been extensive, in the form of scraping the bark off trees.

To alleviate these impacts, in June 1997 Hokkaido established the Comprehensive Deer Management Project to promote comprehensive and proper measures for deer conservation and management, including prevention of the damage to agriculture and forestry. The project committee subsequently produced the Eastern Hokkaido Deer Management Plan to indicate the basic concepts and implementation measures for the management of the deer population.

a) Population Management - Basic Concept

Yezo deer are known to have a tendency to rapidly increase under a combination of protected status and a habitat in good condition, and yet suffer rapid losses when heavy snows or other phenomena strike. In order to establish a stable population to avoid the risk of toppling off the brink into extinction, a target number for the population has been established by means of a 'population index 7, a relative figure derived through population figures obtained from a range of studies. In this index, the population size in 1994 (est. 120,000) is set as a population index of 100, which is used as the standard. The index is then used to determine the numerical trend and to correspondingly adjust the numbers animals to be captured through a feedback system. Three levels of population index and four levels of management measures are set; one level of the measures is implemented in accordance with a level of the index adopted for a year.

b) The three Levels of Population Index

1) Critical threshold (5%)

Population index 5 (6,000 head): this level is more than 1,000 head, which is the IUCN standard for endangered species, and incorporates a calculation of the probability of heavy snows.

2) Outbreak threshold (50%)

Population index 50 (60,000 head): this is the level at which the number may increase

dramatically.

### 3) Optimum level (25%)

Population index 25 (30,000 head): this is the optimum level at which for managing the population. The number is lower than the level at which the population explodes out of hand (outbreak level), and yet high enough so as prevent the population from crashing below the minimum threshold in the event of sudden changes in the environment, such as climatic fluctuations

## c) The Four Levels of Management Measures

### 1) Emergency culling

In the cases when the most recent population index is greater than the outbreak level, culling, with emphasis on females is actively carried out to maintain the index below the outbreak level. The period for applying this measure is limited to about three years to avoid over-culling.

### 2) Gradual population reduction

In cases when the previous year's snowfall is at normal level and the most recent population index is over the target level, intensive culling with emphasis on females is carried out.

### 3) Gradual population increase

In cases when the previous year's snowfall is at normal levels and the most recent population index is below the target level, low intensity culling with emphasis on males is carried out.

### 4) Hunting ban

In cases when the most recent population index is lower than the minimum tolerable level, a prohibition is placed on hunting and control measures are minimised to induce the number to rise. Years immediately following heavy snows, the need to ban hunting is examined taking into account the trend of the index up to the previous year. The population trend up to the preceding year are examined to determine the need or otherwise for imposing a ban on hunting.

## d) Management of the Population

The current population index in the Eastern Hokkaido mostly exceeds the outbreak level and emergency measures are being taken for a three-year period three years to reduce the number to below the outbreak level. Once this is achieved, the target level will be maintained by adjusting the number to be culled, according to the index at the time.

## e) Research and Monitoring

Research to determine the population index is indispensable for the successful

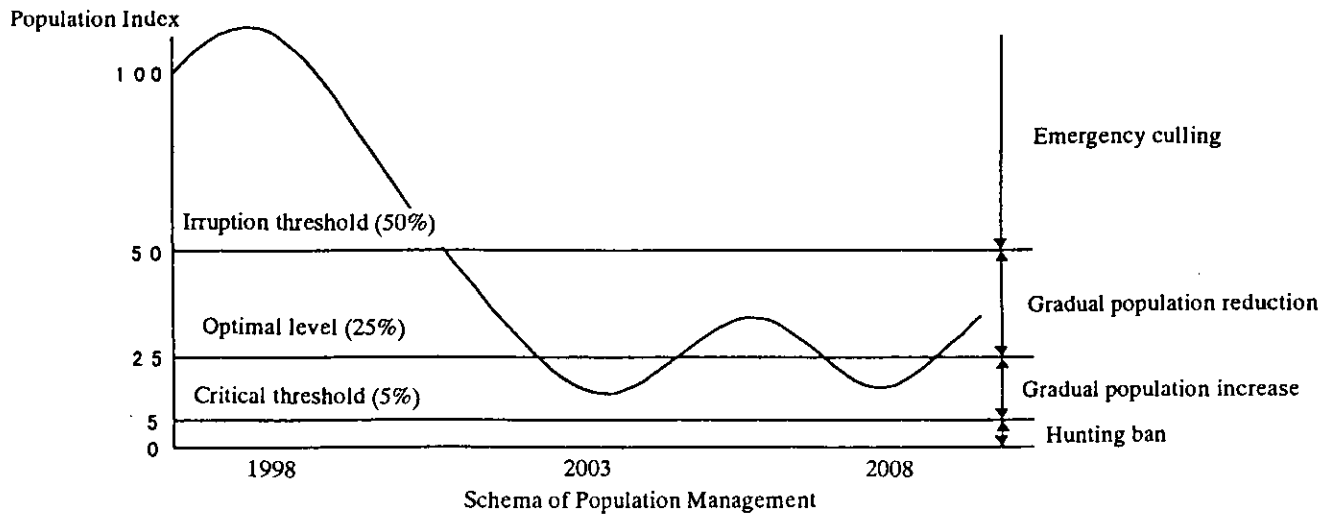
implementation of the management plan, and the impact on the population caused by hunting as well as the control measures themselves also needs to be monitored. Studies are also conducted so as to gain an understanding of the life history and habitat condition, the age composition, breeding condition, seasonal migration and habitat preferences.

f) Other

In 1997 and 1998, Steller's and white-tailed sea eagles, both endangered species, were discovered found dead by lead poisoning, after having fed on stray bullets bullet fragments left inside the remains of deer left behind by hunters. To prevent these incidents from reoccurring are to encourage hunters to bury the remains underground or bring them back to garbage stations since established in major hunting areas.

高橋 洋記 (1998): 道東地区エゾシカ保護管理計画について、野生生物保護行政、野生生物保護行政研究会

(5) Wildlife Conservation and Management in Japan 5-9) Experiment by Local Government: Conservation and Management Plan for Yezo Deer in the Eastern Hokkaido



Changes of Population Index

Population Index	1990	1991	1992	1993	1994	1995	1996	1997
Helicopter census				100			133	108
Right census			68	100	72	115	127	101
Number of hunted animal	68	71	91	100	112	144	141	
observation record	53	44	66	100	83	121	112	
Amount of crop damage	59	71	83	100	100	122	151	
Railway accident	46	71	64	100	109	106	178	

高橋 洋記 (1998) : 道東地区エゾシカ保護管理計画について、野生生物保護行政、野生生物保護行政研究会