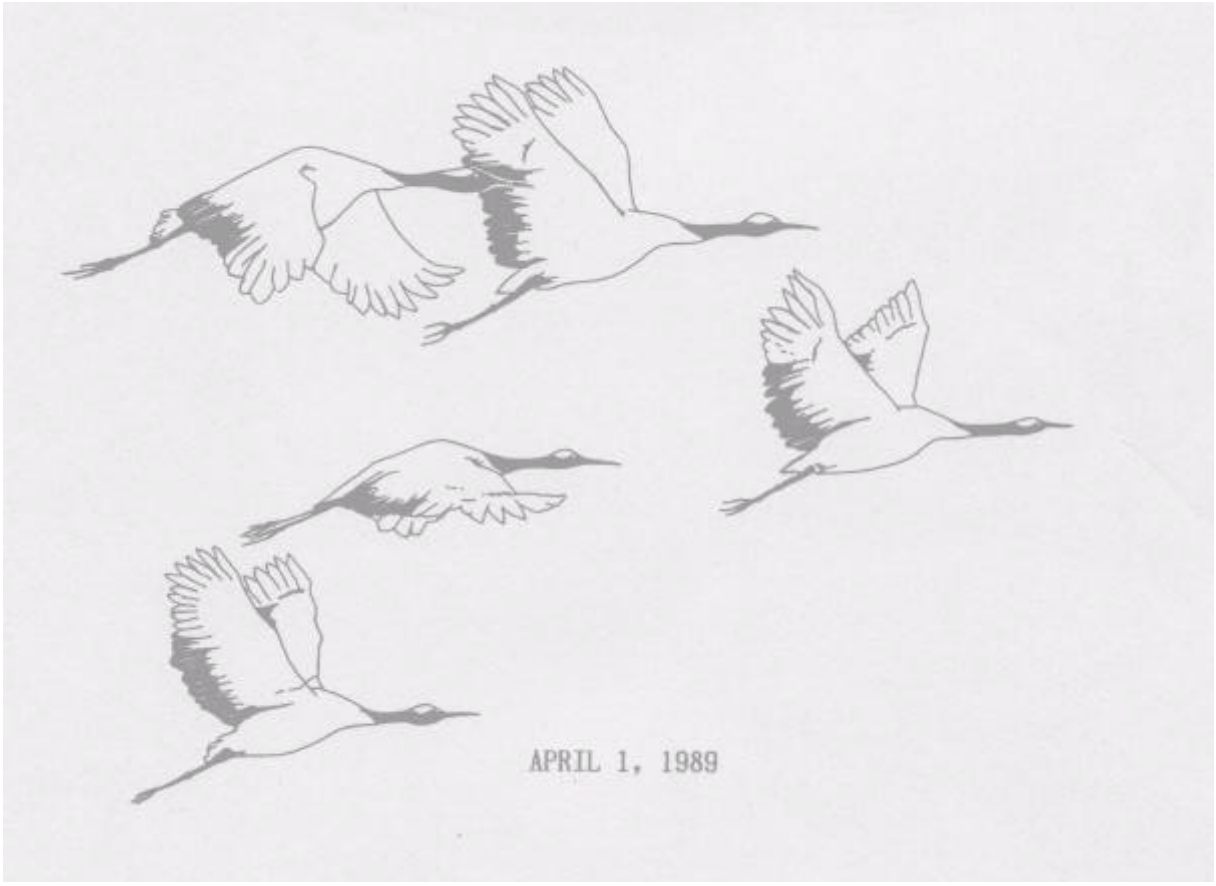
KUSHIRO SHITSUGEN AS DESIGNATED UNDER THE ARTICLE 2 OF THE RAMSAR CONVENTION



KUSHIRO SHITSUGEN NATIONAL PARK OFFICE
NATURE CONSERVATION BUREAU, ENVIRONMENT AGENCY

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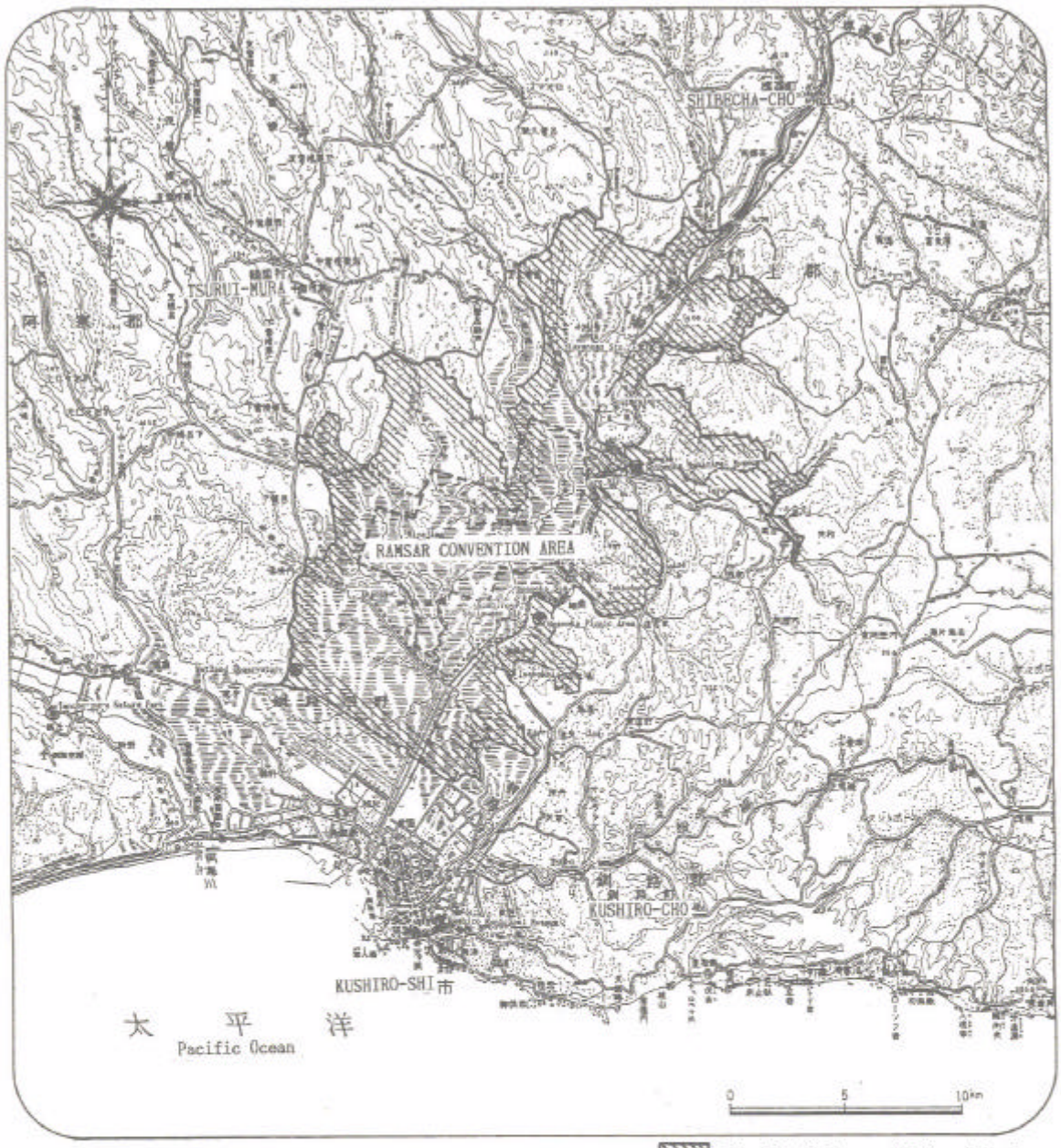

Kushiro Shitsugen

I . GENERAL INFORMATION ABOUT THE SHITSUGEN

1 . Location

The Kushiro Shitsugen is situated in the eastern Hokkaido which is the northernmost main island of Japan . The latitudinal and longitudinal location is 43 09' N and 144' 26' E. According to the Second Basic Survey for Nature Conservation, the area of the *shitsugen* is 21,440 ha which is the largest and covers about 60 % of the total wetland area of Japan.

2. Local Public bodies involved

The Shitsugen belongs to four local public bodies under the Hokkaido Prefecture, i. e. Kushiro-shi, Kushiro-cho, Shibecha-cho and Tsurui-mura. These four local public bodies form a liaison committee for their better communication and cooperation with respect to the *shitsugen*. (In Japan local public bodies are two-story. The upper is consisted of 47 prefectures and the lower is consisted of *shi* (usually translated as city) whose population usually exceeds 50,000, although there are some cities whose population has decreased now to around 30,000 because of depopulation, *machi* or cho (town) whose population exceeds 5.000-10,000 and *mura* or son (village) with less than 5,000-10.000 population.)

3. What is a *shitsugen*?

In Japan rather flat land where the vegetation is characterized by the dominancy of grasses is called 'shitsugen' . In subtropical Japan such as Okinawa Prefecture wetlands occur as mangroves, not as *shitsugens*. In central Japan wetlands were converted to rice fields long ago except at very limited places and those in the alpine zone. Hence *shitsugens* now occur in northern Japan, especially in Hokkaido where the climate is too cold for forests to be formed on wetlands and agriculture has only a hundred years' history. And another characteristic of the *shitsugen* is that they usually accompany peat. Therefore it can be said that *shitsugen* is almost equivalent to German ' Moor' (but not English ' moor').

II . THE HISTORY OF THE LEGAL STATUS OF THE KUSHIRO SHITSUGEN

1 . Before the designation under the Convention

The *tancho*, red-crested crane or Japanese crane (*Grus japonensis*) as a species had been designated under the Law for the Preservation of Historic Sites, Places of Scenic Beauty and Natural Monuments, 1919 as natural monument since August 27, 1935 and has been a special natural monument since March 29, 1952 under the Cultural Properties Law, 1950 which succeeded the 1919 Law . But the first legal protection of the wetland itself was the designation in 1935 of about 2,700 ha of wetland (*shitsugen*) as natural monument entitled "Tancho and its Habitat in Kushiro" under the Cultural Properties Law.

The increase of the birds as well as the understanding of the scientific value of the wetland itself and the value as birds' habitat led on July 6, 1967 to the enlargement of the designated area to 5,011.5 ha and the re-entitlement to the "Kushiro Shitsugen." In 1979 the same 5.012 ha area was designated as the Kuccharobuto Wildlife Protection Area for the conservation of the habitat of the *tancho* and other waterfowl. This designation was valid until October 31, 1998.

But before the expiration agreement was reached on the extension of the Area to 10,948 ha and this was made effective on April 1, 1989. At the same time the Area was renamed as Kushiro Shitsugen Wildlife Protection Area.

2. The designation under the Convention

On the accession to the Ramsar Convention in 1980 the Japanese Government designated the natural monument and wildlife conservation area to be included to the List of Wetlands of International Importance under the Convention. Thus the wetland has been on the List since the Japanese accession to the Convention on October 17, 1980. And now the extension of the Wildlife Protection Area leads to the extension of the Ramsar area soon .

3. The designation as national park

After a decade's argument since the proposal of the designation as national park by a local nature conservation society, a local committee composed of local governments, commercial and industrial agencies etc. concluded in 1982 that the wetland should be designated as national park. Next year the Director-General Bumbei Hara of the Environment Agency visited the wetland and this was followed by the Agency's setting up a study group on the method for the conservation of the wetland. After the proposal of the designation as national park by the Group further study on the method for the protection was done and at last on July 31, 1987, the Environment Agency designated 26,861 ha area as the Kushiro Shitsugen National Park which covered the Ramsar Convention Area and other wetland areas as well as surrounding hills.

III. THE STATUS AND MANAGEMENT OF THE SHITSUGEN

1 . As Wildlife Protection Area

Wildlife protection areas are designated by the Director-General of the Environment Agency or prefectural governors under the Article 8-8 of the Law concerning Wildlife Conservation and Hunting, 1917. The Director -General or prefectural governors can provide on private lands facilities needed for the wildlife. They can designate special protection areas in a wildlife protection area where those development activities such as felling trees and construction that may affect the habitat needs prior permission by the Director-General of the Environment Agency or the prefectural governor concerned .

Within the 5,012 ha Kuccharobuto Wildlife Protection Area 3,833 ha was designated as special protection area. And now 6,490 ha of the enlarged 10,940 ha Kushiro Shitsugen Wildlife Protection Area has been designated as special protection area. The central objective of the Area is the conservation of the *tancho*.

Feeding of *tanchos*, patrolling and counting of the birds are main management practices. Four part-time wardens are employed. They are stationed in the Management Center constructed by the Environment Agency in 1982 and are responsible for patrolling and day-to-day management of the Area and the center. In addition to these, three wildlife protection volunteers have been appointed irrespective of the designated Area and these are cooperating for the management of the Area . There are four other volunteers who are also cooperating for the protection of the tancho in other places than Kushiro. The counting of birds is done under the cooperation of a number of volunteers in December every year .

2. As Natural Monument

Natural monuments are designated by the Minister for Education under the Article 69 of the Cultural Properties Act. The purpose of the designation is to preserve the monument. as it is and the Minister or others nominated by him/her are responsible for its preservation. Those actions which may change the state of the monument need prior permission by the Minister. The Prefectural Government is requested to report to the Ministry on the day-to-day state of the monument. The feeding operation of *tancho* in winter since 1955 was under the responsibility of the Cultural Affairs Agency of the Ministry of Education. But in 1984 this was transferred to the Environment Agency and incorporated into the management of the Wildlife Protection Area. These days 24 tonns of corn in total is fed to *tanchos* at 30 sites every winter.

About half of the sites are situated near the Kushiro Shitsugen and the others are scattered in the Eastern Hokkaido. The corn is provided by the Environment Agency and the Prefectural Government but the feeding operation itself is done by local volunteers.

Mrs. Watanabe's feeding site in the Tsurui-mura is one of the three major sites and here nearly three tonns of corn is fed between mid October and mid April. About 120 *tanchos* come here from the end of January to the end of February. Some young birds which does not have their territories stay here until July these days.

Mr. Ito's is another major feeding place and is also in the Tsurui-mura. Adjacent to this feeding site the Wild Bird Society of Japan constructed a ' Nature Center' with Hr. Ito' s cooperation and a warden is stationed here. As a whole the feeding site and the Nature Center composed the 'Tsurui-mura Ito Sanctuary' . The other major feeding site is hr. Yamazaki's in the Akan-cho .

We must be aware that it is a great number of volunteers' efforts as a whole that encouraged and is encouraging the conservation of the *tancho*.

3. As national Park

National Parks are designated by the Director-General of the Environment Agency under the Article 10 of the Natural Parks Law, 1957. The purpose of the ,Japanese national park is to preserve landscape and to promote recreational utilization of the area. Those actions such as construction, tree felling etc. that may affect landscape need prior permission by the Director-General of the Environment Agency . Government agencies and others, with prior consent by the Director-General, provide facilities such as lodging and camping facilities, car parks, roads, footpaths etc. for recreational activities under national park plans.

For the management of 28 national parks the Environment Agency maintains eleven national park offices. Thus the Kushiro Shitsugen National Park Office is responsible for the management of the Kushiro Shitsugen National Park. But because Japanese national parks are not necessarily designated on national land, its management activities are focused on the control of various development by national and local governments and private firms. Persuasion is important in the development control and effective persuasion is achieved on the basis of realization of the local society and economy as well as the results of study on the wetland ecosystem. Thus one of those emphases is laid on by the Office is the study of the ecosystem.

4. Others

Major agricultural development and public construction works are under the Hokkaido Development Agency and hence the Agency is one of the most influential public agency on the wetland. About 12,000 ha wetland belongs to the Ministry of Finance. Therefore the Ministry is also influential on the wetland, although transfer of the ownership to the Environment Agency has been studied. Prefectural and other local governments also have certain legal power under various laws.

Thus there is no single authority for the management of the wetland. But as consultation among each other is obligatory or customary, each authority, especially the National Park Office which has the most comprehensive power and covers the most extensive area, must make every effort for better communication and coordination.

IV . OUTLINE OF THE ECOSYSTEM OF THE SHITSUGEN

1 . Geographical history and topography

The altitude of the wetland surrounded by hills varies only between 2.5 to 5 meters with 6-8 meter high sand dune along the Pacific coast. Thus it is presumed that the wetland was formed in the bay damned by the dune about 3,000 years ago. The marine organisms in several fresh water lakes in the east are also evidences of the history of the wetland.

There are many rivers that have transported sand and mud to the wetland. The dominant is the Kushiro River which flows down from the Lake Kusshаro in the Akan Nat.ional Park. The second was the Akan River from the Lake Akan, also in the Akan National Park but since the flood in 1920 this has been flowing directly to the Ocean with almost no influence on the wetland. There are many small rivers which flows down to the Kushiro River mostly from the nest to the east . The direction of the flow is believed to have been caused by the larger depression of the land in the east . The number of foggy days here amounts to so many as 116.3 days a year and they occur in summer. This causes the low temperature of 5.5~: and formed the peat one to four meters in depth and these in turn prevented agricultural development of the wetland until recent. days.

2. Vegetation

More than 70 % of the wetland is often covered with water and the soil consists of peat . This type of wetland which is equivalent to German ***Niedermoor*** is characterized by ***yoshi*** (ditch reeds, *Phragmites communis*) community which grows so high as beyond two meters as well as ***suge*** (sedge; ***birodo-suge***: *Carex Iniyabei*, ***mujina-suge***: *C. lasiocarpa* var. *occultans* etc.) which grows to 60 to 80 centimeters in height and occupies such habitats as former lakes and rivers where the water level is higher. ***Hannoki*** (Alder) woodlands also occur in lower places but their habitat is almost restricted to river banks where sand and soils are provided from rivers although they usually have extended their range to adjacent lands where *Sphagnum* communities are dominant.

In those places where rivers had formed banks and had not flooded over these banks for a long time and thus only limited amount of water is provided, ***Mizugoke*** (*Sphagnum*) communities have formed. Dominant *Sphagnum* species are ***ibo-mizugoke*** (*S. papillosum*) and ***cha-mizugoke*** (*S. fuscwnt*) . It is said that the latter is characteristic of climax communities.

Dead plants of *Sphagnum* species have made their habitats slightly higher than surrounding areas and thus slightly drier. This drier condition have allowed such arctic and other plant species to grow as ***gankoran*** (*Empetrum nigrum* var. *japonicum*.) , ***iso-tsutsuji*** (*Ledum paluster*) , ***mosen-goke*** (*Drosera rotundifolia*), ***wata-suge*** (*Eriophorum vaginatum*), ***tsuru-kokemomo*** (*Vaccinium oxycoccus*), ***hime-tsuru-kokemomo*** (*Vaccinium microcarpum*), ***Horomui.-tsutsuji*** (*Chamaedaphne calyculata*), ***hime-shakunage*** (*Andromeda polifolia*), ***kuromi-no-uguisukagura*** (*Lonicera caerulea* var.

emphyllocalyx), ***yachi-yanagi*** (*Myrica gale* var. *tomentosa*), ***Mitsuba-oren*** (*Coptis trifolia*), ***tachi-mannensugi*** (*Lycopodium obscurum* f. *strictum*), ***tsumatori-so*** (*Trientalis europaea*), ***toki-so*** (*Pogonia japonica*), ***hosoba-no-Kiso-chidori*** (*Platanthera tipuloides*) etc.

Three types of water plant communities i. e. submerged, floating-leaved and emerged plant communities occur in the lakes.

Within water such species grow as ***tanuki-mo*** (common bladderwort , *Utricularia australis*), ***sekisho-mo*** (eel grass, *Vallisneria natans*), ***sennin -mo*** (*Potamogeton maackianus*), ***hiroha-no-ebi-mo*** (perfoliate pondweed, *Potamogeton perfoliatus*), ***hozaki-no-fusa-mo*** (Eurasian water milfoil, *Myriophyllum spicatum*), ***hinji-mo*** (ivy duckweed, *Lemna trisulca*), ***itokuzu-mo*** (horned pondweed, *Zannichellia palustris*) and ***ibara-mo*** (holly-leaved naiad, *Najas marina*). In the water of the Shirarutoro, Toro and Takkobu Lakes occurs globe-shaped algae, ***marimo*** (*Cladophora sauteri* f. *toroensis*) . The diameter of a ***marimo*** is usually two to five centimeters.

The dominant species of the floating-leaved plant community are ***hishi*** or Ainu ***pekampe*** (Jesuit's nut, *Trapa japonica*), ***Nemuro-kohone*** (water lily, *Nuphar pumilum*), ***o-hirumushiro*** (broad-leaved pondweed, *Potamogeton natans*) and ***Ezo-hitsujigusa*** (*Nymphaea tetragona* var. *tetragona*).

Representative species of the emerged plant communities are ***makomo*** (Canadian rice, *Zizania latifolia*), ***gama*** (cattail, *Tupha latifolia*), ***yoshi*** (common reed, *Phragmites communis*), ***futo-i*** (blackrush, *Scirpus tabernaemontani*), ***mizu-dokusa*** (horsetail, *Equisetum limosum*), ***mitsu-gashiwa*** (bogbean, *Menyanthes trifoliata*) and ***kurobana-roge*** (*Potentilla palustris*) .

3. Fauna

In the Shitsugen live 46 species of dragon flies, 84 butterflies, more than 900 moths, 35 fish including three introduced and one believed to have been extinct, 4 amphibia, 5 reptiles, more than 170 birds which represent one third of the number seen in Japan and 26 mamals.

(1) Insects

The Shitsugen is characterized by exceptional abundancy of dragon flies. The Shitsugen is one of the very limited number of the habitats in Japan of such remnant species of the Glacier Age as ***Ezo-kaojiro-tombo*** (*Leucorrhinia intermedia ijimai*), ***Iijima-ruriboshi-yana*** (*Aeschna subarctica*) and rare ***Goto-akame-ito-tombo*** (*Erythromma najas baicalensis*) which inhabit in northern Continent such as Siberia . Such endemic species of Hokkaido are also seen here as ***ko-Ezo-tombo*** (*Somatochlora arctica*), ***Ezo-ao-ito-tombo*** (*Lestes dryas*), ***Ezo-akane*** (*Sympetrum striolatum imitoides*) and ***kita-ito-tombo*** (*Agrion ecornutum*) . In addition, such species that live only in limited number of habitats in Honshu are common here as ***karakane-ito-tombo*** (*Nehalennia speciosa*), ***o-torafu-tombo*** (*Epitheca bimaculata*) , ***karakane-tomb***o

(*Cordulia aenea amurensis*), ***hosomi-mori-tombo*** (*Somatochlora arctica*) , ***kibane-mori-tombo*** (*S. graeseri*), ***Mutsu-akane*** (*Sympetrum danae*) and ***kao-jiro-tombo*** (*Leucorrhinia dubia orientalis*) .

(2) ***Kuro-isaza-ami***

In the Lake Toro live a Crustacea species, ***kuro-isaza-ami*** (*Neomysis awatschensis*) . This species now distribute in warmer seas in the central Japan to the mouth of the Yantze Chiang. Thus it is presumed that the species came 5-6,000 years ago when the climate was by two degrees warmer, the sea level was by 5 meters higher and the Wetland was a bay of the sea.

(3) Aquatic insects and ***mizu-guno***

In the scattered ponds of the wetland such aquatic insects are abundant as ***gengoro*** (Dytiscidae species. ***Gengoro***: *Cybister japonicus*, ***o-hime-gengoro***: *Rhantus erraticus*, ***mame-gengoro***: *Gaurodytes optatus*, ***kuro -mame-gengoro***: *G. japonicus*), *amembo* (*Aquarius paludum*) and ***mizusumashi*** (*Gyrinus japonicus*). ***Gengoro-modoki*** (*Dytiscus czerskii*) which is three centimeters in length and attacks tadpoles and small fish is also seen .

(4) ***Zari-gani***

The ***zarigani*** (*Cambaroides japonicus*) which is five centimeters in length and endemic in Japan has been decreasing. In contrast the exotic ***Uchida-zarigani*** which is ten centimeters in length and inhabits in the northern America is now common in the Kushiro River and the Lake Toro. This species was introduced to the Lake Mashu between 1926 and 30 and served in some inns in Teshikaga which is upstream of the Kushiro River. Thus it is presumed that some of these animals that escaped to the River are the origin of today' s population of the Wetland.

(5) ***Kita-sansho-uo***

The distribution of the ***kita-sansho-uo*** (*Salamandrella keyserlingii*) had been believed to be restricted to Siberia, Kamchatka, Sakhalin, northern Kuriles and northern Korea. But in 1954 the species was found in the Wetland and it is the only habitat of the species in Japan. It is presumed that the species came to Japan during the Wurm Glacier Period when the sea level was by 100 meters lower and thus is a remnant of the Glacier Age .

(6) Fish

The Kushiro Shitsugen is abundant in fish species. There are three types of fish according to their life styles, i. e. those which live all their life in the wetland, those which migrate between the wetland and the sea and those in the estuarine water.

Among those whose life is restricted to the wetland are ***koi*** (carp, *Cyprinus carpio*), ***funa*** (*Carassius carassius*), ***yachi-ugui*** (*Moroco percnurus*), introduced ***dojo*** (*Hisgurnus anguillicaudatus*) and *fuku-dojo* (Barbatula toni). In addition to these there live those which have been derived from those species which migrate between the fresh water and the sea such as ***suna-yatsume*** (*Entosphenus reissneri*), ***ito*** (*Hucho perryi*), ***niji-masu*** (rainbow trout, *Salmo gairdnerii irideus*) introduced, ***Ishikari-wakasagi*** (*Hypomesus olidus*), ***Ezo-ugui*** (*Tribolodon ez*oe), ***ibara-tomiyo*** (*Pungitius pungitius*), ***Ezo -tomiyo*** (*P. tymensis*) , ***tomiyo*** (*Pungitius sinensis*) and ***hana-kajika*** (*Cottus nozawae*).

Ito is the largest fresh water fish of Japan. But it has been extinct in the only habitat in Honshu, the Lake Ogawara, and the population of the Kushiro Shitsugen has been decreased considerably. It is said that there lived fish more than two meters in length but these days those over a meter are rare. Young fish feed on insects but those more than 30 centimeters only on fish such as ***fuku-dojo***, ***suna-yatsume*** and *Pungitius spp*.. Larger fish also feed on rats, frogs and snakes. In the Kushiro Shitsugen they live in the Kushiro River and middle and lower courses of other rivers such as the Kottaro, Kuchoro, Setsuri , Hororo and Ninishibetsu. They also live in the lakes.

Among those which migrate between the wetland and the sea are ***kawa-yatsume*** (*Lampetra japonica japonica*), ***cho-zame*** (*Acipencer medirostris mikadoi*), ***sake*** (*Salmo keta*), ***sakura-masu*** (*S. masou masou*), Karafuto-masu (*S. gorbuscha*), ***masunosuke*** (*S. tschawytscha*) , ***ame-masu*** (*Salvelinus leucomaenis*), ***wakasagi*** (*Hypomeus transpacificus*), ***shishamo*** (*Osmerus lanceolatus*), ***kyuri-uo*** (*Q. eperlanus*), ***ugui*** (*Leuciscus hakonensis*), ***maruda-ugui*** (*L. brandti*) and ***itoyo*** (*Gasterosteus aculeatus*), which migrate to the fresh water for spawning. In addition to these, ***unagi*** (eel, *Anguilla japonica*) which migrates to the sea for spawning has been introduced. There also live ***juzukake-haze*** (*Chaenogobius laevis*) , ***uki-gori*** (*C. annularis*), ***numa-chichibu*** (*Tridentiger obscurus*), ***yoshi-nobori*** (*Rhinogobius brunneus*) and ***Ezo-hana-kajika*** (*Cottus nozawae* f. *amphidromus*), which spend only the fry stage in the sea.

Some of the fish are sub-arctic. Among these are ***ito***, ***yachi-ugui***, ***fuku -dojo***, etc.. The most common species here are ***ibara-tomiyo*** (*Pungitius pungitius*) and ***juzukake-haze*** (*Chaenogobius laevis*).

(7) Mammals

Where the ground is sustainably hard, ***Ezo-yukiusagis*** (*Lepus tumidus ainu*) and ***kita-kitsunes*** (*Vulpes vulpes schrencki*) are active in summer and ***Ezo-shikas*** (*Cervus nippon yesoensis*) are also seen sometimes. ***Kita-kitsunes*** sometimes attack ***tanchos***. On river banks and in the *Sphagnum* areas, ***Ezo-yachi-nezumis*** (*Clethrionomys rufocanus bedfordiae*) are abundant .

Along rivers live minks (*Mustela vison*)and ***Hondo-itachis*** (*M. sibirica itatsi*). Minks were introduced from the United States in the fifties for propagation and some of the animals escaped from cages to the wetland. They sometimes attack young birds of ***tancho*** and their number is increasing. ***Hondo-itachis*** which invaded from Honshu a hundred years ago are now decreasing under the pressure of the mink population.

When the wetland is frozen in winter, animals go inner parts of the wetland .

In the hills surrounding the wetland live ***Ezo-risu*** (*Sciurus vulgaris orientis*), ***Ezo-shima-risu*** (*Tamias sibiricus lineatus*), ***Ezo-momonga*** (*Preromys volans orii*), ***Ezo-tanuki*** (*Nyctereutes procyonoides albus*) etc. but these seldom walk into the wetland .

(8) Birds

The wetland offers a variety of habitats to the birds such as rivers and lakes, reed wetland. Sphagnum wetland, the pasture and ***sasa*** grassland in the surrounding areas, woodlands on the hills and the alder (***hannoki***) woodlands. Some species live here all year, some come in summer to breed, some come in winter and others just stop for a while on their migration.

a. Waterfowl

41 species of waterfowl are seen and 13 of them breed in the major rivers and lakes.

Kaitsuburi (*Podiceps ruficollis poggei*) and ***aka-eri-kaitsuburi*** (*P. grisegena holbolly*) breed in the Lakes Shirarutoro. Toro and Aka-numa. The ***ma-gamo*** (*Anas platyrhynchos platyrhynchos*) is common and live all year. Its popular breeding place is the former course of the River Kushiro where the water has almost no flow. Some of the ***kawaaisa*** (*Merfus merganser merganser*) which usually come in winter to breed in the wetland, which is one of their rare breeding place in Japan. Several pairs of ***kawa-semi*** (*Alcedo atthis bengalensis*) breed on the cliffs near the River Kushiro. They sometimes stay in winter, too. The ***Ezo-yama-semi*** (*Ceryle lugubris pallida*) are seen in the Lake Shirarutoro and its vicinity in summer and in unfrozen rivers in winter. The ***karu-gamo*** (*Anas poecilorhyncha zonorhyncha*), ***o-ban*** (*Fulica atra atra*), ***ban*** (*Gallinura chloropus indica*) and ***shodo-tsubame*** (*Riparia riparia ijimae*) also breed in summer and some birds of the ***kinkuro-hajiro*** (*Aythya fuligula*), ***yoshi-gamo*** (*Anas falcata*), ***ko-gamo*** (*A. crecca crecca*) and ***hoshi-hajiro*** (*Arythya ferina*) which usually come in winter possibly breed.

In October, a number of ***o-hakucho*** (*Cygnus cygnus*), ***hoshi-hajiro*** (European Pochard, *Aythya ferina*), ***hidori -gamo*** (*Anas penelope*), ***hojiro-gamo*** (*Bucephala clangula clangula*) and ***mikoaisa*** (*Mergus albellus*) come. The ***hishikui*** (*Anser fabalis serrirostris*) is also seen. In January and February when most water areas freeze, many of the birds move to the south but some birds stay in a part of the Lake Shirarutoro where a hot sprig keeps the water unfrozen, the River Chiruwatsunai where many springs do so and the River Setsuri where the rapid flow does so. In late March to late April the birds come again and ***O-washi*** (*Haliaeetus pelagicus*) and ***ojiro-washi*** (*H. albicilla*) also come to attack them.

b. Birds in grassland

In the grassland surrounding the wetland 36 species are seen and 19 of them breed.

In the Sphagnum areas the ***shima-aoji*** (*Emberiza aureola ornata*) and makino-sennyu (*Locustella lanceolata*) are abundant and ***binzui*** (*Anthus hodgsoni hodgsoni*), ***nobitaki*** (*Saxicola torquata stejnegeri*), ***ko-yoshikiri*** (*Acrocephalus bistrigiceps*) and ***shima-sennyu*** (*Locustella ochotensis ochotensis*) are also seen. Where reeds and alder shrubs occur, the ***ko-yoshikiri*** and ***shima-sennyu*** are rather abundant and the ***nogoma*** (*Erithacus calliope*), ***nobitaki***, ***aoji*** (*Emberiza spodocephala personata*) and ***beni -mashiko*** (U*ragus sibiricus sanguinolentus*) are also seen. 15 species live and ten of them breed in the *Sphagnum* areas.

The representative of the reed grassland is ***tancho*** (*Grus japonensis*). The ***ko-yoshirkiri*** (*Acrocephalus bistrigiceps*) is abundant but other species are not frequently seen except the ***shima-sennyu*** (*Locustella ochotensis ochotensis*) and ***o-jurin*** (*Embereiza schoeniclus pyrrhulina*) which are seen near rivers and lakes.

c . Birds in woodlands

In the secondary woodlands on the hills live 60 species and 50 of them breed. ***Sendai-mushikui*** (*Phylloscopus occipitales coronatus*), ***shiju-kara*** (*Parus major minor*), ***hashibuto-gara*** (*P. palustris hensoni*) and ***aoji*** (*Emberiza spodocephala personata*) are abundant and ***Ezo-aka-gera*** (*Dendrocopos major japonicus*), ***Ezo-ko-gera*** (*D. kizuki ijimae*), ***akahara*** (*Turdus chrysolaus*), ***ki-bitaki*** (*Ficedula narcissima narcissima*), ***Ezo-mushikui*** (*Phylloscopus tenellipes*), ***shirohara-goju-kara*** (*Sitta europaea asiatica*) and ***ko-mukudori*** (*Sturnus phillipensis*) are common. The hill called the Miyajima Peninsula is one of the rare places where large trees remain, where ***kuma-gera*** (*Dryocopus martius*) and ***ojiro-washi***. (*Haliaeetus albicilla*) live and ***shima-fukuro*** (*Ketupa blakistoni blakistoni*) is said to live also. There forest birds such as ***Ezo-raicho*** (*Tetrastes bonasia vicinitas*), ***yama-shigi*** (*Scolopax rusticola*), ***ao-bato*** (*Sphenurus sieboldii sieboldii*), ***ikaru*** (*Eophona personata personata*) and ***uso*** (*Pyrrhula pyrrhula griseiventris*) also live.

Woodlands of alder and willow have developed especially along the Rivers Kushiro, Setsuri and Kuchoro. Some of the woodlands which have developed to ten meters in height allow those species usually common in the woodlands out of the wetland.

The abundant species are ***ko-yoshikiri*** (*Acrocephalus bistrigiceps*), ***shima-sennyu*** (*Locustella ochotensis ochotensis*) and ***makino-sennyu*** (*L. lanceolata*) which are usual inhabitants of the wetland. On large trunks of alder breed ***Ezo-aka-gera*** (*Dendrocopos major japonicus*), ***Ezo-ko-gera*** (*D. kizuki ijimae*) and ***ko-aka-gera*** (*D. minor amurensis*) and their abandoned holes are used by ***shiju-kara*** (*Parus major minor*), ***hashibuto-gara*** (P. palustris hensoni) , ko-mukudori (Sturnus philippensis) and nyunai-suzume (Pass*er rutilans*). ***Sendai-mushikui*** and ***aoji*** are also abundant and ***ki-bitaki***, ***nogoma***, ***akahara*** and ***kiji-bato*** are also seen. ***Kumagera*** apparently visits the woodlands in winter. In the south-western part of the wetland is a colony of more than 300 birds of ***ao-sagi*** (*Ardea cinerea jouyi*). The size of the colony is among the largest of Japan. The wetland rich in fish, tadpoles and aquatic insects on which the ***ao-sagi*** feeds is apparently a preferable habitat of the species.

d. Migration of birds

There has not been any comprehensive survey on the migration of birds of the Shitsugen. But according to some banding survey etc. most birds such as swans and ducks migrate from Kamchatka through Chishima (Kuril) Islands, the Lake Furen in the eastern end of Hokkaido, the Kushiro Shitsugen and the Tokachi Region of Hokkaido to Izu-numa in the Miyagi Prefecture which is the second wetland of Japan designated under the Ramsar Convention. The exception is ***ojiro-washi*** (*Haliaeetus albicilla*) which migrates from Sakhalin to eastern Hokkaido as well as ***o-washi*** (*H. pelagicus*) .

4. The history of rehabilitation and the ecology of ***tancho***

The ***tancho*** is the largest bird species of Japan. A male bird is 2.4 meters in width and 15 kilogrammes in weight. In addition to the Japanese population of about 500, about 1,000 birds are said to breed in the Heilungchiang Province of China and the Lake Khanka and migrate to the Korean Peninsula and the southern China in winter.

It is said that the ***tancho*** lived all over Hokkaido and some migrated to Honshu in winter so that some birds could be seen in Edo (former name of Tokyo), too. But presumably because of hunting pressure and the human immigration and development of Hokkaido, in the mid-Meiji Era (late 19th century) the species was considered to be extinct.

In 1924 more than ten birds were found in Kira Kotan in the Kushiro Shitsugen and this led to the initiation of the protection efforts of the species such as the release of ***dojo*** and planting of ***seri*** (*Oenanthe javanica*) to their habitat. But the successful protection activities of feeding in winter began in 1952. This lowered the mortality rate of birds in winter apparently caused by the lack of food. At the same time annual counting of birds began. As a result 33 birds were observed in 1952, 135 in 1958, 200 in 1967 and now 485 on December 5, 1988. But the numbers of young birds have been almost stable at the level of 30-40 birds since 1957. This and the fact that some birds migrate to other places in Hokkaido and the Kunashiri Island and the Habomai Islands in summer indicate that the Kushiro Shitsugen cannot sustain any more breeding territory. And it is also said that the carrying capacity of Hokkaido itself has now been almost full.

Another important activity for the rehabilitation of the ***tancho*** was the artificial hatching by the Tancho-zuru Nature Park. It was established in 1958 with five birds in captivity. But it was in 1970 when the first successful artificial hatching was achieved. After this, the operation has been steadily successful and several tens of young birds left here to the wild. Now the third generation visit here to hatch their eggs. In 1982 artificial hatching activity was transferred to the Tancho Protection and Propagation Center newly established in the Kushiro Municipal Zoological Park under the subsidy of the Culture Agency. Since then the important function of the Tancho-zuru Nature Park has been education of visitors and offering safe artificial territories where some food is given and young birds are protected from diseases, some predators and some accidents such as flooding etc..

In the Park each pair of birds are given a fenced artificial breeding territory of 9,000 square meters where seven pairs live

all year. There is no roof so that the birds fly to the wetland to obtain natural food, although some fish and corn are provided here. Five of the 41 ***tanchos*** that increased in Hokkaido between 1986 and 1987 were the young which were born and grew up here.

A pair of ***tancho*** is steady all their life. They go into the wetland and settle their territory of 1-7 square kilometers in March. Their nest is made of dead plants of reed, two meters in diameter and thirty centimeters in height. Usually two eggs are laid, each ten centimeters in the major axis and six in the minor.

The pair switch several times a day to hatch their eggs for 32 days. It is usual that only the elder bird of the two hatched can survive because the other bird is smaller because of its few day later hatchery. The pair feed the young on small fish and insects. The young can fly in 100 days.

The number of ***tanchos***' territories known is about 30 in the Kushiro Shitsugen, 10 along the Bekkambetsu River, 10 in the Kiritappu Shitsugen and its vicinity, 30 near the Lake Furen and 4 along the coast of the Tokachi Region.

V . RECREATIONAL AND CIVIL ACTIVITIES

1. Recreational activities

There have been limited number of recreational activities in the Kushiro Shitsugen. The most popular and persistent has been always fishing. Catching salmon in fresh water is prohibited for the conservation of the resource. But it is said that there are a certain number of anglers who go far into the wetland to catch ***itos*** and that they often tramp vegetation, frighten ***tanchos*** and the waves of their boats wash the river banks. But to what extent those activities have been affecting the ecosystem and the wildlife has not been ascertained because it is not easy to check all places of the extensive wetland where a lot of small streams are seen.

Before the settlement of people from Honshu fishing was an essential activity of the life of the Ainu people. But because the scale of the fishing by them, places their fishing is practiced are limited to Lake Toro, and a sport fishing organization and the Ainu organization have agreed on the way of sport fishing in the Lake. There is no conflict between the sport fishing, the Ainu fishing and the conservation of the resource in the Lake. But in other lakes and rivers this kind of agreement does not exist and hence there is a potential conflict between the conservation of the resources and sport fishing.

Hunting has been another popular recreational activity, although the number of hunters are limited because of the license system of fire arms. Catching any animal in the wildlife protection area and special protection areas of national parks, which cover an extensive area of the shitsugen, is prohibited under the Article 11 of the Law concerning the Wildlife Conservation and Hunting. The hills surrounding the wetland had been designated as Hunting Suspension Area. But the period of this designation was over last year. Then it is possible that hunting will be again a pressure on the animal population of the wetland.

Hiking and canoeing have begun recently. But the number of people engaged in these activities is still limited and they are not still beyond an experimental stage because of the lack of facilities such as footpaths, launching facilities and public conveniences. Horse riding with nature interpretation which the National Park Office organized in 1988 was very popular but it is totally within an experiment, although some people are contemplating similar types of horse riding. The Kushiro Shitsugen National Park Plan has accepted a bicycle road in the south-western area but the date it is realized is unknown.

The Park Plan has accepted several picnic areas where visitors can enjoy the scenic beauty of the wetland. Construction of some of the areas has begun and the number of the visitors has been increasing, although it will take some years to complete the first stage construction. As these picnic areas so far constructed are on the hills, there has been no impact on the ecosystem of the wetland. But construction of footpaths in the wetland will begin soon and therefore careful planning and construction work are essential.

Photography is now popular. Some photographers are not content within picnic areas and paths and go to some remote places, where the wetland ecosystem may be affected and in fact at some places some trees have cut down for the sake of pictures without any obstruction.

2. Civil activities

The number of the civil organizations related to the conservation of the wetland and their members has been increasing. Ten organizations attended the first Meeting of the Organizations Related to the Environmental Conservation of Kushiro in August. Those were the Kushiro Nature Conservation Society, the Kushiro Salmon Association, the Kushiro Shitsugen Club, the Kushiro Branch of the Wild Birds Society of Japan, Tancho Lovers' Society of the Akan Town, the Kushiro Society of the International Crane Foundation, the Lake Harutori Society, the Kushiro Branch of the Hokkaido Sport Fishing Association, the Citizens' Association to Wash the Life, etc.. Among other organizations are the Children's Nature Conservation League of Takkobu and the associations attached to the museums of the Kushiro City and the Shibecha Town.

The organizations in total form a great variety of activities. Some are good at studying ecosystems, some at sound recreational activities, some at fish, others at birds.

VI . THE FUTURE OF THE SHITSUGEN

1 . The ecosystem

The wetland ecosystem is easily threatened by a variety of activities. Among those activities that may affect the ecosystem are agricultural development in the basins of the rivers, especially in the upper stream outside the wetland, which may increase the amount of the sand and mud flowing down to the wetland, construction of roads, embankment, drainage, deforestation, visitors' trampling, especially into the *Sphagnum* community and approaching to ***tanchos***.

In order to avoid threatening the ecosystem, proper management should be done. As a basis of proper management scientific study of the wetland is important. But no systematic study aimed for the sound management has been done so far. Therefore the National Park Office which was set up in October, 1987 has begun a study on the method of monitoring the wetland ecosystem. The Ministry of Agriculture, Forestry and Fishery, which is concerned with the effects of the agricultural development, and some other governmental and non-governmental organizations have also begun studies of the wetland. Understanding of the social context is also important in the management of the wetland. Therefore the National Park Office has begun a social and economic study, too.

2. Recreational activities and facilities

Proper enhancement of recreational. activities is important for the sound management of the wetland ecosystem, because otherwise the potential recreational needs may deteriorate the ecosystem and properly regulated recreational activities can help people effectively learn the importance and the way of conserving the ecosystem.

Sound recreational activities are enhanced by way of providing information of sound activities and proper facilities at proper places.

The National Park Office and local public bodies have been providing recreational services, such as horse riding tours with guides and interpretive services about the wetland. The local public bodies are rather enthusiastic in providing interpretive services and the number of the attendants is always up to their capacity. There are also such citizens who want to become volunteer interpreters. The Prefectural Government has already held a seminar for such volunteers and the National Park Office has also finished another three-month seminar.

Recreational facilities should be provided systematically. The most systematic plan on these is the legal National Park Plan. The prescription of recreational facilities by the Plan is concerned with the kind and the locations of the facilities that may be provided by the Director-General of the Environment Agency or someone else under his/her consent, but the timing and the budget for the facilities are not prescribed. Subsidies are provided by the Agency to prefectural governments but not to others. Thus those local public bodies other than the Prefecture that intend to provide facilities

must do so on their own or apply for other subsidies which may be given for other purposes than national park.

Before the designation of the National Park, only a few facilities such as the small visitor center called 'Observatory' constructed by the Kushiro City in 1983 had been provided. Even after the designation the provision of facilities is limited because only two years have passed and the Park Plan does not intend to provide many facilities. The facilities provided or under construction are the Hoso-oka Picnic Site in the east of the wetland by the Prefectural Government under the Agency's subsidy and by the Kushiro Town on its own. Several other picnic sites and footpaths are to be provided by the Prefecture and other local public bodies. The Environment Agency itself intends to provide two visitor centers within five years. In addition to these by the public sector, the private sector, individuals and some companies, are contemplating some development but what have been done so far are several small lodging facilities and JR's Kushiro Shitsugen Station adjacent to the Hoso-oka Picnic Site. Two companies of Tokyo which have already successfully developed several complexes of recreational facilities in other places than Kushiro have purchased extensive land and the local public bodies expect their development but it is still uncertain if they really develop the land or not.

3. Enlargement of the wildlife protection area and the Ramsar Convention area

On the occasion of the designation of the National Park, it became a persisting opinion that the Ramsar Convention area should be enlarged up to the Park area. The Environment Agency responsible for the conservation of the wetlands under the Ramsar Convention maintains that the Ramsar Convention area should be conserved as a wildlife protection area, not as a national park whose major objective is the conservation of landscape, not wildlife. On the other hand farmers are often sensitive about deer which often appear in their farmlands and pasture.

As a result it was agreed and has now announced that the Kuccharobuto Wildlife Protection Area is enlarged on April 1, 1989 so that the area covers a more extensive area of the wetland. This does not automatically mean enlargement of the Ramsar Convention Area but this will be officially decided soon .

4. International cooperation

There has not been any substantial international cooperation except the listing of the wetland on the Ramsar Convention List and some cooperative scientific studies related to some migratory birds. Thus there are a lot to be done.

International cooperation can be done at various levels such as between citizens, students, researchers, local public, bodies and central governments, by way of bilateral or multilateral and financial or technical cooperation and in various fields such as wetland ecosystem as a whole, migratory birds, fish, dragon flies, peat sciences, agricultural development, nature interpretation, tourism etc.

The local public bodies and citizens are interested in international cooperation and wonder how they can be involved in it. Therefore it seems important that the central government keeps it in mind and always keep studying the way they

help them. The Kushiro-shi is now intends to host the fifth meeting of the Conference of the Parties to the Ramsar Convention in 1993. If the meeting is held in Kushiro, it will further enhance the citizens' awareness of the international cooperation and give an important chance for citizens, researchers and local public bodies to participate or initiate activities aimed for international cooperation.

5. More rational management and coordination of the legal regimes

As stated in Chapter 11, three kinds of legal protection i. e. wildlife protection area, natural monument and national park are envisaged on the wetland and not a small number of agencies of the central government and local public bodies are responsible for or concerned with its management. Further voluntary consultation as well as legal consultation among those are essential for coordinated and rational management and the conservation of the wetland.

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