

seaweed. It is considered that this unique distribution is a result of the following conditions: the southern shift of the Soya warm current in summer; the southern shift of the East Sakhalin Current (cold current) in winter; and the both currents end up approximately in this area. While the coastal waters of the Shiretoko Peninsula belong to the temperate zone in terms of seaweed distribution, it can be classified as a boundary temperate zone strongly influenced by cold currents.

The coastal waters of the Shiretoko Peninsula are also habitats for some rare seaweeds. *Cymathaere japonica* (listed as “Rare” on Fisheries Agency Data book: R, FA Data book) is an isolated species with a limited distribution range. The domestic habitat is limited to the coastal area of Rausu town (Kawashima, 1994). *Akkesiphycus lubricum* is a primitive type of kelp, which is found only in a limited area. The southern limit for this species is in Kushiro, eastern part of Hokkaido. In 1944, it was found in Akkeshi and later, in 1968, distribution near Shiretoko Peninsula was confirmed (Kurogi, 1968; Kurogi and Yamada, 1970).

3a. 6 Animals

The nominated site supports a diverse population of animal species, combining northern species from Sakhalin and southern species from Honshu. In addition, almost all the terrestrial mammals and birds that historically inhabited Hokkaido are preserved at the nominated site due to its pristine virgin nature.

3a.6. 1 Terrestrial mammals

Terrestrial mammals that inhabit the Shiretoko Peninsula are classified in six orders, 12 families and 35 species (Shiretoko Museum, 2000). Among them, three species of one family of Chiroptera are listed as Endangered (EN) or Lower Risk (LR) in the IUCN Red List, and further five species of the same family and one species of Insectivora, total of nine species of two orders, are listed as Endangered (EN) or Vulnerable (VU) in the Red List of the Ministry of the Environment.

The topography of the Shiretoko Peninsula is complex and there are various types of vegetation within a narrow range of altitudes from the coastline to the mountain peaks of approximately 1,600 meters above sea



Brown bear *Ursus arctos* photo by Shiretoko Nature Foundation

level. In addition, terrestrial mammals can utilize both the products from forests and sea. Thus, the potential food supply is diverse. For example, in autumn before the hibernation, brown bears *Ursus arctos* rely upon salmon and trout which swim upstream, in addition to nuts such as acorns. The bears' food items amount over 90 types of plant and animal materials. The population of red fox *Vulpes vulpes schrencki* in the area is unique in the sense that they rely on a larger amount of marine products such as fish (Tsukada, 1997). Overall, there is little human disturbance. Therefore, the Shiretoko Peninsula provides an untouched and rich habitat for terrestrial mammals. This is reflected in the home range size of the wildlife. Home range size tends to become smaller with the increase in quality of the habitat. The home range of adult female of brown bears in the Shiretoko Peninsula is a mere 15 square kilometers on average and it is one of the smallest in the world (Table 3-1).



Red fox *Vulpes vulpes schrencki*
photo by Ministry of the Environment

Table 3-1 Home range sizes of adult female of brown bears in the Shiretoko Peninsula and other areas of the world

Area	Home range size (km ²)*	Number of samples	Citation
North America, the continental divide area	315	26	Canfield and Harting, 1987
Canadian Rockies	167	19	Canfield and Harting, 1987
Alaska, inland	132	6	Canfield and Harting, 1987
Alaska, peninsula	290	30	Glenn and Miller, 1980
Kodiak/Afognak Islands	27	48	Canfield and Harting, 1987
Sweden	307	8	Friebe <i>et al.</i> , 2001
Hokkaido, Oshima Peninsula	34	2	Mano, 1994
Hokkaido, Shiretoko Peninsula	15	13	Yamanaka <i>et al.</i> , 1995

*Mean annual home range size

The high densities of large mammals such as the brown bear and Yezo sika deer *Cervus nippon yesoensis* also indicate that the Shiretoko Peninsula is a high quality habitat for terrestrial mammals. The estimated density of brown bears in the Shiretoko Peninsula ranges from 7.3 to 14.1 bears per 100 square kilometers (Aoi, 1981) to an estimate suggesting a minimum of 35 bears per 100 square kilometers (Yamanaka *et al.*, 1995). These figures are comparable to those in Kamchatka (8.1 to 13.0 bears/100 km²; Revenko, 1998) which is a high density area. Thus, the Shiretoko Peninsula has one of the densest populations of brown bears in the world. Furthermore, Yezo sika deer, a typical southern origin species (Nagata, 1999), is the largest subspecies of the sika deer *C. nippon* distributed from Vietnam to Far East Asia (Kaji, 1988). Its density is high in the Shiretoko Peninsula (Okada, 2000).



Yezo sika deer *Cervus nippon yesoensis*
photo by MACHIDA Yasuyoshi

3a.6.2 Marine Mammals

Since 1980, two orders, nine families, 22 genera and 28 species of marine mammals have been identified in the coastal area of the Shiretoko Peninsula (Pinnipedia: one order, two families, five genera and seven species; Cetacea: one order, seven families, 17 genera and 21 species) (*e.g.* Naito, 1973; Ohtaishi and Nakagawa, 1988). Among them, two orders, seven families, nine genera and 10 species (Pinnipedia: one order, two families, two genera and three species; Cetacea: one order, five families, seven genera and seven species) are found year-around or seasonally (*e.g.* Ohtaishi and Saito, 1981; Ishinazaka and Uni, 2000).

Description

There are six species of important marine mammals, which are frequently found in the nominated site and the surrounding waters. They are the Steller sea lion *Eumetopias jubatus* (EN, IUCN Red List and VU, MoE Red List), larga seal *Phoca largha*, ribbon seal *P. fasciata*, harbor porpoise *Phocoena phocoena* (its ecological behavior is unknown), minke whale *Balaenoptera acutorostrata*, and sperm whale *Physeter catodon*. The largest number of Pinnipedia in Japanese waters, including all seven species of Pinnipedia existing in Japan, were found in the coastal waters of the Shiretoko Peninsula (Naito, 1973; Ohtaishi and Saito, 1981).

The sea ice is important for the feeding, resting and breeding of marine mammals, since the coastal waters of the Shiretoko Peninsula are rich in food and the ice that covers the sea in winter provides protection from predators and waves. Therefore, the area is a globally significant as an important habitat of marine mammals.

The following are the brief descriptions of some important species;

- Pinnipedia

- “Steller sea lion *Eumetopias jubatus*”

The coastal waters of the Shiretoko Peninsula are one of the areas where the largest number of Steller sea lions migrate along the coastal area of Hokkaido. They need this area to winter and feed, therefore the area is essential for maintaining the Steller sea lion population. The visiting pod usually consists of some 100 individuals, mainly female (Ohtaishi and Saito, 1981; Yamanaka *et al.*, 1986; Ohtaishi and Wada, 1999). Some males visit the area but most are pregnant females that have mated in surrounding waters of Kamchatka and Kuril Islands (Ishinazaka and Endo, 1999; Ohtaishi and Wada, 1999; Gentry, 2000). These sea lions gather along the near-shore waters about one kilometer from the coast (resting area) or along the edge of the continental shelf near the isobathymetric line of 200 meters in depth (feeding area) (Goto and Shimazaki, 1998).

- “Larga seal *Phoca largha* and ribbon seal *P. Fasciata*”

The coastal waters of the Shiretoko Peninsula are an important breeding and feeding site for larga seals, ribbon seals and their pups. In particular, the area is the most southern habitat for ribbon seals. It is



Pod of female Steller sea lions *Eumetopias jubatus* photo by KURASAWA Eiichi



Male Steller sea lion *Eumetopias jubatus* photo by ISII Eiji

estimated that the numbers of larga seal and ribbon seal are 13,000 and 3,000 respectively, on the Hokkaido side of the Sea of Okhotsk during March and April (Mizuno *et al.*, 2002). The larga seal is mostly distributed near the coast, while the ribbon seal tends to stay offshore. These seals mate and give birth on the sea ice around the Shiretoko Peninsula (Naito and Konno, 1979; Hammill, 2000; Mizuno *et al.*, 2001). As the sea ice covers the ocean surface, it provides an excellent refuge for the seals from predators such as killer whales *Orcinus orca*. The time when the pups wean and begin foraging in the water coincides with the spring bloom of phytoplankton triggered by the sea ice melting. Because the krill which is a major food item for the pups increases by feeding on the phytoplankton during this period, the pups are able to utilize this rich and nutritious food.

• Cetacea

There are seven species commonly distributed in the coastal waters within six miles (approx. 11 km) off the Shiretoko Peninsula, including the waters of the nominated site; harbor porpoise, Pacific white-sided dolphin *Lagenorhynchus obliquidens*, Dall's porpoise *Phocoenoides dalli*, killer whale, minke whale *Balaenoptera acutorostrata*, Baird's beaked whale *Berardius bairdii* and sperm whale *Physeter catodon*. In addition, some species are infrequently found, such as gray whale *Eschrichtius robustus* (Asian subpopulation: EN, FA Data book), sei whale *Balaenoptera borealis* (EN, IUCN Red List), humpback whale *Megaptera novaeangliae*, and short-finned pilot whale *Globicephala macrorhynchus* (Tappanaga) (*e.g.* Kawamura, 1981; Nishimoto, 1985; Kawamura, 1986; Kato, 1992; Uni, 1998).

Little is known about the habitat of the harbor porpoise and therefore this area is an important site where they can be found frequently. In addition, two rare and little-known beaked whales *Mesoplodon ginkgodens*, and *M. carlhubbsi* have been discovered in the coastal waters of the Shiretoko Peninsula (Ishinazaka and Uni, 2000).

The coastal waters of the Shiretoko Peninsula are important for the above cetaceans not only as a feeding and breeding site but also as a route in their seasonal migration. The four species of cetaceans (harbor porpoise, Pacific white-sided dolphin, Dall's porpoise and killer whale) often congregate in this area for breeding and raising their young. In particular, the area is the only confirmed breeding site in the west Pacific Ocean for Dall's porpoise which is declining in number. (Amano and Kuramochi, 1992; Ferrero and Walker, 1999).

3a. 6. 3 Birds

Factors such as complex topography, diverse types of vegetation and the presence of seasonal sea ice around Shiretoko provide various habitats for birds and consequently, the avifauna of the Shiretoko Peninsula is rich in variety. In addition, due to the abundant food supply and virgin forests, the peninsula is an important wintering and breeding site for species such as Steller's sea eagle *Haliaeetus pelagicus* (VU, IUCN Red List), white-tailed eagle *H. albicilla* (LR, IUCN Red List), and Blakiston's fish-owl *Ketupa blakistoni blakistoni* (EN, IUCN Red List). In the nominated site, these three species and black woodpecker *Dryocopus martius* are designated as Natural Monuments (protected species, see 4c.5) due to their high scientific value identified.



Killer whale *Orcinus orca* photo by KURASAWA Eiichi



Black woodpecker *Dryocopus martius*
photo by AOKI Noriyuki

The vertical distribution of flora supports a wide range of birds, from montane species such as great tits *Parus major* and (Japanese) bush warblers *Cettia diphone* to alpine and subalpine species such as the (Eurasian) nutcracker *Nucifraga caryocatactes*, arctic warbler *Phylloscopus borealis* and red-flanked bushrobin *Tarsiger cyanurus*. Grassland birds such as stonechat *Saxicola torquata*, Siberian meadow bunting *Enberiza cioedes*, skylark *Alauda arvensis* can be seen in the grasslands at the tip and among the sand dunes at base of the peninsula as well as on the top of cliffs.

While there are no large lakes in the peninsula, there are several small lakes and marshes located in various places within the mountain range. Waterfowl such as mallard *Anas platyrhynchos*, mandarin duck *Aix galericulata*, little grebe *Tachybaptus ruficollis* and falcated duck *Anas falcata* breed at the Shiretoko-goko lakes and Lake Rausu. The rivers are short with many rapids and waterfalls, excellent habitats for species of wagtails, common and greater pied kingfishers *Alcedo atthis* and *Ceryle lugubris*, and brown dipper *Cinclus pallasii*. In addition, it has been reported that the Blakiston's fish-owl inhabits the midstream to the mouth areas of small and mid-size rivers. There are sea cliffs higher than 100 meters above sea level all along the coast from Utoro on the western side of the peninsula to Shiretoko Cape and these cliffs are breeding grounds for seabirds such as the Japanese cormorant *Phalacrocorax capillatus*, slaty-backed gull *Larus schistisagus* and spectacled guillemot *Cepphus carbo* (Nakagawa, 1988). In particular, the area is one of the top breeding grounds for Japanese cormorant (Nakagawa, 1981).

Migratory birds which visit the coastal waters of the Shiretoko Peninsula in spring or autumn include large flocks of short-tailed shearwaters *Puffinus tenuirostris*, red-necked phalarope *Phalaropus lobatus* and fulmar *Fulmarus glacialis*.

In winter, there is abundant zooplankton and fish in the water surrounding the sea ice area and this attracts a large number of sea ducks and auklets. Flocks of Ross's gull *Rhodostethia rosea* which inhabits the Arctic Circle have visited the area following the southward expansion of sea ice (Nakagawa, 1988).

Juvenile long-billed murrelet *Brachyramphus marmoratus perdux* which is a subspecies of the marbled murrelet *B. marmoratus* (VU, IUCN Red List) has been observed on the coastal waters of the Shiretoko Peninsula (Nelson *et al.*, 2002). This species usually spends its life on the ocean and only appears on land to nest in the treetops of tall inland forests.

As described above, there have been 18 orders, 50 families and 264 species of birds recorded in the Shiretoko Peninsula, reflecting the wide range of habitats provided by the diverse environment (Nagata, 1956; Japanese Society for Preservation of Birds-Kushiro chapter, 2001; Shiretoko Museum, unpublished). While there are few species which belong to the snipe family and heron family due to the lack of large lakes, marshes and tidflats, the diverse avifauna of the area includes 49 percent of the 542 species recorded in Japan.

Among the bird species recorded in the Shiretoko Peninsula, Japanese night heron *Gorsachius goisagi* (EN, IUCN Red List), Japanese crane *Grus japonensis* (EN, IUCN Red List), Blakiston's fish-owl (EN, IUCN Red List), Baikal teal *Anas formosa* (VU, IUCN Red List), Steller's sea eagle (VU, IUCN Red List), Japanese yellow bunting *Emberiza sulphurata* (VU, IUCN Red List), white-tailed eagle (LR, IUCN Red List) and Japanese waxing *Bombycilla japonica* (LR, IUCN Red List) are listed on the IUCN Red List. In particular, the Shiretoko Peninsula is a very important habitat for the Blakiston's fish-owl, Steller's sea eagle, and white-tailed eagle.

There are two subspecies (*Ketupa blakistoni blakistoni* and *K. b. doerriesi*) of Blakiston's fish-owl, and even on a species level, it is estimated that there are less than 1,000 owls left in the entire world (BirdLife International, 2000). In particular, there is a concern that the subspecies *Ketupa blakistoni blakistoni* is endangered as there are only 200 owls in Hokkaido, Kunashiri, Etorofu and Sakhalin (Shari town and Rausu town, 1999). It is estimated that approximately 120 of them inhabit Hokkaido, which is their only habitat in Japan (Ministry of the Environment, 2002), and approximately a quarter of this population is found in the Shiretoko Peninsula (Takenaka, 1999). As it is a fish-eating owl which needs forests with large tree cavities to nest, the Shiretoko Peninsula is an important habitat since it has a dense fish population (Takenaka, 1999) and well preserved forests containing trees with large cavities.

Steller's sea eagle is a large eagle which breeds only in far eastern parts of Russia, mainly in northern Eurasia. It is estimated that the number of the eagles is as low as 5,000 (BirdLife International, 2000). In some years, more than 2,000 Steller's sea eagles winter at the Shiretoko Peninsula (Working Group for White-tailed Eagles and Steller's Sea Eagles, 1988) and the location is a globally important wintering site for this magnificent bird.

With regard to the white-tailed eagle, more than 10 pairs breed in the Shiretoko Peninsula every year. Reflecting the abundant food source, the density of mating pairs is high (Shari town and Rausu town, 1999) as well as the high number of fledged chicks (Shiraki, 1997). Up to 600 white-tailed eagles have been recorded at the site in winter (Working Group for White-tailed Eagles and Steller's Sea Eagles, 1988), and the peninsula is a globally important wintering location for the species. In autumn, both Steller's sea eagle and white-tailed eagle feed upon the salmon which swim upstream (Ueta *et al.*, 1999) and in winter, they hunt walleye pollack *Theragra chalcogramma*. Consequently, the eagles play an important role in ecosystem circulation from sea to land.

3a. 6. 4 Reptiles and Amphibians

Two orders, five families and seven species of reptiles as well as two orders, three families and three species of amphibians have been recorded by August 2003 in the Shiretoko Peninsula (Shiretoko Museum, 2003). Among them, the Ezo salamander *Hynobius retardatus*, Ezo brown frog *Rana pirica* and Japanese five-lined skink *Eumeces latiscutatus* are species endemic to Japan. In addition, the leatherback turtle *Dermochelys coriacea* is listed as endangered species (EN, FA Data book).



Ezo brown frog *Rana pirica* photo by AOKI Noriyuki

Despite the cold climate, fauna in the nominated site includes the Japanese four-lined snake *Elaphe quadrivirgata* and Japanese grass lizard *Takydromus tachydromoides* which are relatively rare in Hokkaido, as well as the Japanese mamushi *Agkistrodon blomhoffii* which had only been identified in the coastal area by the Sea of Japan and the Hidaka region. Their presence is likely to be due to the effects of the warm geothermal temperature from volcanic activity (Ohtaishi, 1988).

3a. 6. 5 Fishes

Twenty-nine orders, 79 families and 255 species of fishes have been recorded in the freshwater system of the Shiretoko Peninsula and its coastal waters (Shiretoko Museum, 2003). The freshwater fish fauna in the Shiretoko Peninsula is characterized by the fact that many of the species such as salmon are dependent on the sea. In addition, the peninsula is the only Japanese habitat for the sea-run form of dolly varden *Salvelinus malma* as well as being its southernmost habitat in the world. The coastal waters of the Shiretoko Peninsula are mainly populated with northern fishes. However, due to the Soya current which is the only warm ocean current in the Sea of Okhotsk, there are many species of fishes usually only seen in tropical and subtropical seas. As a result, the Shiretoko area is unique within the Sea of Okhotsk in terms of the fish fauna.

3a. 6. 5. 1 Freshwater fishes

By 2003, eight orders, 12 families and 42 species of fish have been recorded in the rivers in the Shiretoko Peninsula (Komiya and Takahashi, 1988; Komiya, 2003). Twenty-eight species, approximately 70 percent of the total number of species, are diadromous fish (i.e. fish that spend a part of their life cycle in the sea). The proportion of such species is higher in the nominated site than at the base of the peninsula. There are few freshwater fish (i.e. fish that spend their entire life in freshwater) at the tip of the peninsula (Shimoda *et al.*, 1993).

Six species of salmonid species naturally reproduce in the rivers of the Shiretoko Peninsula (Komiya, 2003). This represents half of the salmonid species occurring in the waters of the Sea of Okhotsk. In addition, there are three other salmonid species found in the rivers of the Shiretoko Peninsula. The rivers play an important role as a spawning and wintering area for these nine species. Sea-run forms (which migrate to the sea and return upstream to spawn) have been confirmed for all of these nine salmonid species (Komiya, 2003), indicating the close integration of the land and sea ecosystem. Furthermore, since development and water pollution in coastal areas elsewhere on the Sea of Okhotsk is negatively affecting the marine ecosystem (Murakami, 2003), the Shiretoko Peninsula is becoming more important as a key breeding area for these species.

As mentioned above, sea-run forms have been found for all salmonid species in the Shiretoko Peninsula. In particular, the Shiretoko Peninsula is the only habitat in Japan and the southernmost habitat in the world for the sea-run form of dolly varden (Komiya and Takahashi, 1988; Shari town and Rausu town, 1999; Rausu town, 2001). The distribution of dolly varden in Hokkaido is usually limited to the upstream areas and the species is land-locked. However, at the Shiretoko Peninsula, the species



Dolly varden *Salvelinus malma*
photo by SUZUKI Yoshifusa

is distributed throughout the river from the source to the mouth. It is known that the distribution of dolly varden is restricted by the water temperature. In one river, it has been found that the distribution is limited to areas where the maximum summer water temperature is less than 16 degrees Celsius (Shimoda *et al.*, 2003; Taniguchi *et al.*, 2002). The existence of forests along the river bank is imperative for preventing the rise in water temperature, maintaining a cool river water temperature of around 15 degrees Celsius (Komiyama, 2003). It is suggested that the well preserved forests on the river banks in the Shiretoko Peninsula maintain the distribution of dolly varden in the entire river basins. In addition, these forests supply organic matter and as a result, rivers in the Shiretoko Peninsula which run through forests from upstream areas to the river mouths provide excellent habitats for freshwater fishes (Komiyama and Takahashi, 1988).

3a. 6. 5. 2 Marine fishes

Despite being close to the shore, the topography of the ocean floor at the tip of the Shiretoko Peninsula forms a steep slope and the sea can be as deep as 2,000 meters in some areas. The coastal waters of the Shiretoko Peninsula are affected by the warm Soya current in summer. On the other hand, the sea is covered with ice in winter and the significant change in oceanic conditions is a unique characteristic of the area.

Twenty-six orders, 74 families and 223 species of fish have been collected from the coastal waters of the Shiretoko Peninsula (Nakagawa and Nobetsu, 2003). The major taxonomic groups of fish including the most dominant Cottidae, are fishes which are mainly distributed in northern Japan and higher latitudes (Nobetsu *et al.*, 1998; Nakagawa and Nobetsu, 2003). It is suggested that the composition of species reflect the cool water temperature of the area and the effects of the sea ice in winter.

While approximately 70 percent of the total number of species consists of northern fishes which are mainly found in subarctic oceans, some 14 percent consists of species distributed over a wide range of climates and



Fringed blenny *Chirlophis japonicus* photo by KURASAWA Eiichi



Hypsagonus proboscoidalis photo by KURASAWA Eiichi

approximately another 14 percent consists of southern fishes mainly found in tropical and subtropical seas. Therefore, the area is unique in supporting a varied fish fauna which includes both northern and southern species (Nobetsu *et al.*, 1998; Nakagawa and Nobetsu, 2003).

The effect of the warm Soya current, which covers the surface layer of the coastal area from spring to autumn, and warming of the surface water temperature to exceed 20 degrees Celsius from late August to early September, is suggested as a basis for the diverse fish fauna.

With regard to the proportion of northern and southern fishes in the shallow waters and the waters under 200 meters, wide distribution and Southern fish species number approximately 35 percent in shallow waters while the corresponding figure is approximately 15 percent in waters more than 200 meters deep (Nakagawa and Nobetsu, 2003). The difference indicates that the southern fishes rely on the warmer Soya current which flows on the surface of the sea.

As mentioned earlier in the section on freshwater fishes, the salmonid species are an excellent example of the diverse fish fauna in the coastal waters of the Shiretoko Peninsula. Ten species of salmonid fish have been found in the coastal waters of the Shiretoko Peninsula and a majority of the 13 species in the Pacific Ocean and 12 species in the Sea of Okhotsk are represented in this group. Consequently, the coastal waters of the Shiretoko Peninsula are globally recognized as an area with a large variety of salmonid species and as a key migration route.

3a. 6. 6 Insects

The Shiretoko Peninsula is an area with a large variety of insects. This is due to the complex topography, wide range of altitudes and various natural environments, including many lakes, marshes and moors as well as differences in local climates, all contributing to the formation of complex habitats. While the entomofauna consists mainly of northern species, there are southern species (e.g. *Polyphylla laticollis*, *Scarites aterrimus*) due to the warm Soya Current (Hori, 2003).

In the Shiretoko Peninsula and the surrounding area, there are more than 2,500 species of insects (Hori, 2003) including approximately 1,850 species of moths (Kawahara and Hayashi, 1996; Kawahara and Matsuda, 1998; Kawahara *et al.*, 2001) and more than 500 species of beetles (Nishijima *et al.*, 1985 and Haga, 1996). Among them, there are species for which Shiretoko is the only habitat in Japan and species that were recorded first in here, such as *Bryophila orthogramma*, *Leptocarabus kurilensis* ssp. *rausuanus* and *Polygraphus shariensis*. Also, *Vaciniina optilete daisetsuzaana*, a northern-type butterfly, is designated as a Natural Monument due to its high scientific value for the country.

Insects play an important role in transporting the nutrients of the ocean to the land. Aquatic insects such as stoneflies, sedges and midges form colonies and decompose the carcasses of salmon and trout after they have swum upstream and spawned (Ito and Nakajima, 2003). The nutrients from decomposed carcasses make river water and riverbank soils eutrophic, and enhance the growth of plants and other aquatic animals. In addition, the aquatic insects become the diet of fish in the river, thereby playing a major role in the food chain.



Vaciniina optilete daisetsuzaana (Natural monument)
photo by ISII Eiji



3a. 7 Utilization of natural resources

The natural environment of the nominated site is mostly conserved with little intervention by human activities. Natural resources in the nominated site and its surrounding areas are mainly utilized by the fishing and tourism industries.

The fishing industry uses set nets, gill nets and aquaculture in coastal waters of the Shiretoko Peninsula. The major marine resources harvested are salmon and trout, sagittated calamary *Todarodes pacificus*, walleye pollack *Theragra chalcogramma* and kelp. There have been almost no changes in production volume as well as the CPUE (catch per unit of effort) in the last ten years for most of fisheries resources.

The level of catches in the fisheries operating in the coastal waters of the Shiretoko Peninsula are supported by the high production level of the sea. To achieve sustainable use of these marine resources, fishery activities are controlled by the Fisheries Law and other related laws, regulations issued by Hokkaido prefectural government, voluntary restrictions by the fishery industry, as well as an artificial production and fry release program for salmon and trout (see also “5a. Development Pressures”).

With regard to the tourism industry, there are approximately 2.34 million visitors (in 2001) to the Shiretoko Peninsula in one year. Summer is the high season for tourists, but some 300,000 people come to see the sea ice in winter (January to March). Popular tourist activities include nature walks to the Shiretoko-goko lakes and Kamuiwakka, trekking around Lake Rausu, sightseeing from Shiretoko pass and climbing in the Shiretoko mountain range. Nature sightseeing from the sea on tour boats is another popular attraction and the annual number of passengers on these boats can reach 160,000 (in 2002).

There are no forestry activities aiming for timber production within the National Forests which account for 95 percent of the nominated site. However, there are some forest management activities, such as planned tree thinning which takes into account the surrounding natural landscape, in a small scale private forest within the site.

3b. Human history and development

Human inhabitants first appeared on the Shiretoko Peninsula approximately 10,000 years ago. About 1,200 years ago, there was an ethnic group of ocean hunters from the continent who had migrated southward down the Hokkaido's coastline of the Sea of Okhotsk. Approximately 800 years ago, these people were absorbed and assimilated in another ethnic group which inhabited the entire island of Hokkaido. This is suggested as the origin of the Ainu people (Gouchi, 1981).

Thereafter, there is little evidence of human intervention at the Shiretoko Peninsula until 130 years ago and The Ainu culture, where hunter-gatherers utilized nature's bounties from the sea and mountains,

persisted at the Shiretoko Peninsula with little evidence of human intervention until 130 years ago (Ishigaki, 1994). The Ainu people worshiped nature and revered brown bear *Ursus arctos*, Blakiston's fish-owl *Ketupa blakistoni blakistoni* and killer whale *Orcinus orca* as their gods. They developed a culture of treasuring the affluent nature. It is assumed that the population density on the Shiretoko Peninsula was extremely low, for the total Ainu population of the entire Hokkaido area was only twenty to thirty thousand at the end of the Edo period. The map of the Shiretoko Peninsula from the Edo period (1854) lists a detailed description of Ainu place names that indicate that the Ainu had a comprehensive understanding of the peninsula. The name Shiretoko is derived from the Ainu word “*sir.etok*” which means “the end of Mother Earth.”

In the Meiji period (from 1869), the development pressure on the natural environment of Hokkaido was intensified, but in the Shiretoko Peninsula, human intervention was difficult because of its harsh conditions. Development of the inland area of the peninsula began in 1914 and additional attempts were made to settle the area in 1935 and 1949. These three attempts ended in failure and all settlers abandoned their land by 1966 (Murata, 1994).

In the first half of the 1960s, construction of the Shiretoko Forest Road and Shiretoko Crossroad began in succession. In 1964, Shiretoko was designated as the twenty-third National Park in Japan in accordance with the Natural Parks Law. The park was realized through the vision and strong opinions held by the members of the Natural Park Council (Ministry of Health and Welfare) at that time. The botanists and other council members insisted that it was necessary to designate the area as a national park before the natural landscape, flora and fauna of the Shiretoko Peninsula were exploited by tourism development. Therefore, the national park was established with a clear policy to “conserve the virgin nature” and it remains the Japanese national park with the strongest emphasis on nature conservation. Later, in 1980, the Onnebetsudake Wilderness Area was designated, followed by the National Wildlife Protection Area and Forest Ecosystem Reserve in 1982 and 1990 respectively. These nature conservation programs for Shiretoko Peninsula far exceed the level of conservation implemented in other natural protected areas (Ohtaishi *et al.*, 1988; Shari town and Rausu town, 1999).

Furthermore, movement called “The Shiretoko 100 Square-Meter Forest Trust” was started in 1977. Driven by a determination to conserve nature, the local communities and municipality initiated this action by preventing the redevelopment of abandoned settlement areas and restoring the virgin forests. The movement developed as the first major scale National Trust conservation program in Japan, whereby privately owned lands have been repurchased with the aim of restoring the natural ecosystem (See also 3d.) (Table 3-2).

As a result of these measures to conserve the natural environment, virgin wilderness still exists throughout the Shiretoko Peninsula.

Table 3-2 Chronology of Human Activities

Year	Events
1790	Fishermen from Honshu island began fishing in the area. Their catches consisted mainly of herring, salmon and trout.
1912	Settlers entered the Utoro area. Settlements were also built in Iwaobetsu area in 1914.
1925	All settlers in the Iwaobetsu area abandoned their homesteads.
1937	Resettlement of Iwaobetsu area.
1949	Construction of Utoro fishery port started. Inauguration of Fisheries Cooperative. Modern fishing operations started. Large-scale colonization started in Iwaobetsu area based on the post-war emergency land cultivation plan.
1962	Construction of Shiretoko Forest Road started.
1963	Construction of Shiretoko Crossroad started. Lighthouse completed at Cape Shiretoko.
1964	Shiretoko Peninsula was designated as the twenty-third National Park.
1965	Black woodpecker was designated as a Natural Monument.
1966	All farming community left Iwaobetsu area. End of settlement activity in this area.
1967	<i>Vaciniina optilete</i> was designated as a Natural Monument.
1969	Shiretoko Forest Road opened.
1970	Steller's sea eagle and white-tailed eagle were designated as Natural Monuments.
1971	Blakiston's fish-owl was designated as a Natural Monument. Shiretoko Tourist Boom. Annual number of visitors to the National Park exceeds one million.
1972	Enactment of Shari town Nature Protection Ordinance. Shari town became one of the first municipalities to establish ordinance for nature protection.
1974	Shari town and Rausu town jointly signed the "Shiretoko Charter."
1977	"The Shiretoko 100 Square-Meter Forest Trust" started in the Shiretoko National Park.
1978	Shiretoko Museum opened.
1980	Designation of Onnebetsudake Wilderness Area. Shiretoko Crossroad opened. In order to prevent the destruction of nature, the road was restricted to transit use and development of large facilities along the road was prohibited. "The Shiretoko 100 Square - Meter Forest Trust" achieved first-stage goal (120 hectares).
1982	Government designation of Shiretoko National Wildlife Protection Area. The second largest national wildlife protection area in Japan.
1983	Rausu Visitor's Center opened.
1986-1987	Logging in the national forest within Shiretoko National Park attracts nationwide attention.
1988	Shiretoko Nature Center opened. Shiretoko Forest Center opened. Formation of Shiretoko Nature Foundation.
1990	Designation of Shiretoko Forest Ecosystem Reserve.
1991	Partial opening of new Utoropeleke port.
1994	Acquisition by Hokkaido prefecture of private lands within the National Park.
1997	"The Shiretoko 100 Square-Meter Forest Trust" achieved its target. "The 100 Square-Meter Forest Movement Trust" started. The trust aims to regenerate virgin forests and natural ecosystems.
2001	Actions such as the renewal of the Shiretoko Wildlife Protection Area resulted in enhanced levels of conservation including expansion of protected areas.
2004	Expansion of Shiretoko Forest Ecosystem Reserve. (In process)



Traditional Ainu boots made from salmon skin
photo by Shiretoko Museum