

# **Shiretoko World Natural Heritage Site Conservation Project Supported by Daikin Industries (July 2021–June 2022)**

## **1. Project to Restore Rich Diversity of Shiretoko's Forests**

### **1-1. The 100 Square-Meter Forest Movement Trust and Related Projects**

The 100 Square-Meter Forest Movement Trust (organized by Shari Town) purchased land formerly set aside for agricultural and forestry development in Shiretoko, Hokkaido to avoid commercial and residential development and restore the native forests that once grew there. This movement, which began in 1977, completed the purchase of land after receiving support from countless individuals. From 1997, initiatives were launched to restore diverse forest and vegetation on the land.

#### **1-1-1. Restoration of Mixed Forest**

As with the previous year, heavy machinery was used to remove broadleaf bamboo (Photo 1-1). Once an area is overgrown with broadleaf bamboo, it is nearly impossible for other vegetation to compete for sunlight to grow. For this reason, efforts are made to remove the broadleaf bamboo—roots and all—to encourage the renewal of new trees and forest. In FY2021, which marks the fifth year of the program, broadleaf bamboo was removed at an approximately 1.0-hectare site along a plantation of Glehn's spruce in the Iwaobetsu district. In other locations, proactive efforts were made to reforest broadleaf bamboo forests by planting of medium-sized seedlings of broadleaf trees at cleared sites (Photo 1-2). Locally, signboards were installed that explain about this initiative (Photo 1-3 and 1-4).

In addition to the reforestation initiatives in broadleaf bamboo areas, patrols were conducted to inspect the deer fences installed to prevent the existing forest and seedlings from Sika deer. Repairs were made to the fence whenever damage due to fallen trees or other causes was found (see Photo 1-5 and 1-6) in an effort to maintain the fence.

Initiatives are underway at the Iwaobetsu River, which flows through the Trust Lands, to improve the river's ecosystem, including restocking the masu salmon population that once resided there. At the end of September 2022, we installed a simple fishway

(Photo 1-7) on the Banno River, a tributary to the Iwaobetsu River, to eliminate the concrete steps that had prevented fish from swimming up and down stream. The thinned timber of Glehn's spruce cleared as part of the forest restoration program was used to construct part of the fishway. Unfortunately, however, the record-breaking heavy rains that deluged the area in November caused a flood that completely destroyed the fishway (Photo 1-8). We visited the site immediately thereafter together with the designer to reinforce the damaged part of the structure and reevaluate the overall design. Plans call for the repairs to be made next fiscal year. There are two erosion control dams administered by the Forestry Agency located downriver from the fishway, and once upgrades on both are completed, the spawning area of masu salmon is expected to expand around one kilometer upriver. After much wait, this marks an initiative to improve the river ecosystem, which is deeply correlated with the restoration of riverside forests in the Iwaobetsu River basin during the phase one period.



Photo 1-1. Removing broadleaf bamboo with heavy machinery (June 8, 2021)



Photo 1-2. Transplanting medium seedlings of broadleaf deciduous trees in areas where broadleaf bamboo was removed



Photo 1-3. Installation of signboard on the forest restoration of broadleaf bamboo areas (October 4, 2021)



Photo 1-4. Transplanting medium seedlings of broadleaf deciduous trees in the Glehn's spruce plantation



Photo 1-5 Removal of trees hanging on deer fences (June 10, 2021)



Photo 1-6 Repair work on deer fences (February 29, 2022)



Photo 1-7 Progress of work on the fishway at Banno River (September 28, 2021)



Photo 1-8 Damages incurred by the fishway on Banno River (November 11, 2021)

### 1-1-2. Hosting of Employee Volunteers from Daikin Industries

In FY2021, we held the Daikin Industries Shiretoko Volunteer event for the first time in two years in autumn (September 2022). Although we were prepared to host the volunteer event in winter (February 2022), it was unfortunately cancelled due to the Covid-19 pandemic. To date, this program had hosted 18 volunteer events with a total participation of 196 employees.

### 1-1-3. Challenges and Goals for the Next Fiscal Year and Onward

There are spots of pasture and broadleaf bamboo land (un-established woodland), which have not transitioned into a forest even after 40 years of cultivation, located within the Trust Lands. The afforestation within the forested area has become a medium- to long-term issue. Therefore, over the past four years, we removed broadleaf bamboo across a total area of 1.8 hectares, including this program. The Trust Lands have around 41 hectares of un-established woodland, which requires that these removal initiatives be sustained going forward, while carefully selected where to proceed next with reforestation. Even in places where the broadleaf bamboo has been

steadily removed, feeding demand among Sika deer remains elevated. This has required that we identify effective reforestation approaches, including transplanting medium seedlings of broadleaf deciduous trees with a protective bark netting.

The population density of Sika deer in the Trust Lands has declined compared to previous years, but we continue to observe damages from Sika deer eating tree bark. For this reason, we intend to continue maintaining the deer fences.

The restoration of riverside forest in the Iwaobetsu River basin during phase one of the program is moving ahead steadily. Improvements to related river ecosystems face remaining issues, including modifications to the erosion control dams. Improvement work at these two dams administered by the Forestry Agency is expected to get underway in around two years, which is expected to provide a major development in the improvement of the river ecosystem. Next fiscal year, we will repair the simple fishway on the Banno River and move ahead with other initiative to improve the river ecosystem wherever possible, while confirming that fish are able to access the fishway.

## **2. Project to Protect and Pass on Shiretoko's Value as a World Heritage Site**

### 2-1. Activities for Passing on Shiretoko's Forests to Future Generations

This project supports nature learning activities for local children with the aims of passing on the values and appeal of Shiretoko as a World Natural Heritage, as well as fostering human resources crucial to the conservation of Shiretoko's nature in the future.

#### 2-1-1. Supporting Environmental Education for Children

Elementary schools in Shari and Rausu towns have class time dedicated to learning about the nature of Shiretoko within the comprehensive learning period each year. In FY2021, we conducted observation learning in the pond on the left bank of Pereke River. These activities targeted amphibians including frogs living in Shiretoko for Shiretoko Utoro Elementary and Junior High School. We also held living organism observation and learning at Cape Chashikotsu for marine animals. In addition, through the Shiretoko Museum Kids program, aimed at providing local children with hands on learning of Shiretoko's nature and culture, we conducted an observation event where we collected the fish of Shiretoko, including Dolly Varden trout and masu salmon (those living in the river year-round) that are found in the river systems of Shari River in August.

We used waders purchased through donated funds in these water-based field activities. This greatly contributed to setting up the children for success as they can focus on learning without worrying about getting wet. In the future, we plan to continue these activities that promote abundant nature to children living in the areas of the World Heritage Site.

A two-year picture book creation project was initiated in 2020 to convey to the general public the history of forests and development in Shiretoko and the current reforestation projects taking place there. In March this year, the picture book *What Mizunara Told Me* was completed. An illustration and charts detailing the site of forest restoration in Shiretoko and the 100 Square-Meter Forest Movement were incorporated into the ending pages of the book to provide straightforward information on these efforts. This book is more than just a story as it also conveys the back story to the reforestation initiative in Shiretoko. The colophon also indicated the book was produced with support through donations.





Photo 2-1. Shiretoko Museum Kids Field Observation of Living Things in Rivers



Photo 2-2. Comprehensive learning period on “Observation and Learning of Living Things on the Chashikotsu Shores” of third graders at Shiretoko Utoro Elementary School in Shari Town



Photo 2-3. Front page of the picture book *What Mizunara Told Me*

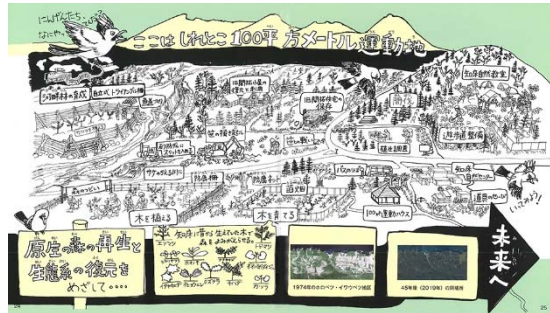


Photo 2-4. Ending page of the picture book *What Mizunara Told Me*

As the pandemic persisted, we did our best to provide in-person guest lectures at schools and on-site lectures on the pioneering history and background of the movement. In the lectures for fourth grade students at Shiretoko Utoro Elementary and Shari Elementary schools and sophomores at Shari Senior High School, we implemented hands on tree planting to foster a sense of ownership. In addition, we accepted intern students from the Okhotsk campus of Tokyo University of Agriculture and provided practicum for those students studying to become forest ecology researchers (Photo 2-5 and Photo 2-6).



Photo 2-5. Fourth graders of Shari Elementary School walking on the Pioneer House Trail (September 10, 2021)



Photo 2-6. Juniors at Tokyo University of Agriculture visiting the area (July 8, 2021)

## 2-1-2. Activity to Promote Initiatives for Nature Conservation and Forest Restoration to Visitors of Shiretoko

We conducted maintenance on the trails of Shiretoko Morizukuri no Michi, which has two trails: the Deer Fence Trail and Pioneer House Trail. We developed these trails for visitors to learn about the pioneer history, actual process of forest development, and the natural environment in the Trust Lands. Despite the Covid-19 pandemic, we were able to open to the general public throughout the year in FY2021. With snow melting in April, visitors began to use the two trails. The counter at the Pioneer House Trail tallied 1,339 visitors. In October, we displayed artwork created using the thinned timber of Glehn's spruce at the end of the Pioneer House Trail to improve its attractiveness.

## 2-2. Supporting Activities So That Humans and Bears Can Coexist

A new goal was set for the support program conducted in Rausu Town to assist activities that foster coexistence between people and brown bears. In addition to the maintenance of electric fences installed in phase one, we will create a town that is difficult for brown bears to approach, as a measure for areas without electric fences. Specifically, we aim to make human residential areas less brown bear friendly by clearing obstructions and removing places for brown bears to hide, feed, or move about by cutting down tall bushes of giant butterbur, giant knotweed, and broadleaf bamboo.

### 2-2-1. Maintenance of the Electric Fences Installed in Phase One

In previous years, the electric fences were installed roughly from late April until late December, which accounts for the period from before brown bears become active as snow melts until their hibernation. This fiscal year, we completed the installation of

electric fences surrounding the downtown area by mid-April (Photo 2-7 and Photo 2-8). In the Kitahama-Aidomari section, we monitored the condition of the remaining snow and managed to complete the installation by May 21, electrifying the fences earlier than usual.

It is important to maintain a voltage of at least 4,000 volts, which is the benchmark for what brown bears tend to avoid. Electric fences were maintained about once or twice a week to address issues such as power loss from power lines contacting plants, disconnection due to fallen trees, or corrosion and wear.

The voltage was inspected on a daily basis. Immediate repairs were made and batteries replaced in the event of reduced voltage. The electric fences in the downtown area were monitored using the remote monitoring system introduced in FY2020. This system allows the connectivity status to be checked by computer or mobile phone. We also conducted bush mowing as needed to ensure that no plants come in contact with the power lines, while herbicides were used to save some labor.



Photo 2-7. Installation of electric fences



Photo 2-8. Installation of electric fences

#### 2-2-2. Creating an Environment that is Difficult for Brown Bears to Approach Residential Area (bush mowing)

There are many tall bushes of giant butterbur, giant knotweed, and broadleaf bamboo that are around two meters tall surrounding residential areas within Rausu Town. These bushes not only serve as routes of movement and places to hide, but giant butterburs also make up an important food source for brown bears in early summer. Due to the poor visibility within these bushes, it is possible for people and the bears to come in very close contact, which raises the level of danger. As such, in phase two, we are creating an environment that is less accessible to brown bears by removing the plants mentioned above surrounding residential areas.



Since 2019, a bush mowing event has been held to support the community association activities. Municipal employees of Rausu Town not only participated in the mowing, but also took part in promoting the event among community members across the entire town. In addition, local construction companies also joined in 2020, which further expanded the reach of brown bear countermeasures. The number of participating districts and people was 2 districts and 12 participants in FY2019, 11 districts and 179 participants in FY2020, and 10 districts and 157 participants in FY2021. By working together with town residents, we were able to not only share our ideas for bear prevention but also gain a sense of fulfillment after the program. Through this goodwill project conducted over many years, we feel increased understanding among local residents towards our initiatives for brown bear prevention.



Photo 2-9. Meeting before the grass weeding event



Photo 2-10. Grass weeding (Yagihama Town)

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