Shiretoko World Natural Heritage Site Conservation Project Supported by Daikin Industries

(July 2022–June 2023)

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.

This project is expanding upon the nature restoration efforts carried out in the Iwaobetsu River basin, which flows through the center of the area purchased by The 100-square-meter Movement Trust (hereinafter, referred to as the "Trust Lands") during the first phase of support (2011 to 2015). The target area has also been expanded to the entire Trust Lands to restore the old growth forest. In the second phase of the support period (2016 to 2024), the project will grow and plant seedlings of various tree species native to Shiretoko. In addition, as a countermeasure against the significant damages caused by Sika deer, which is a major obstacle to the restoration of the old growth forest, we will repair the deer fences and bark protection nets that were installed in the past. Additionally, we will work to transform the broadleaf bamboo forests that have grown since the early days of Hokkaido's settlement into a productive forest and diversify the tree species in the planted forest of Glehn's spruce. In this manner, we will take steps to restore the forests to their original state prior to Hokkaido's settlement.

1-1-1. Restoration of Mixed Forest

As with the previous year, heavy machinery was used to remove broadleaf bamboo and return topsoil (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 FY2022, which marks the sixth year of the program, broadleaf bamboo was removed at an approximately 0.7-hectare site in the Iwaobetsu district. As

for work to it was found in the past that bracken flourished due to the nutrients of backfilled topsoil, hindering sunlight for tree seedlings. Therefore, a trial plot was set up without the return of topsoil. We plan to verify whether the elimination of topsoil nutrients reduces bracken and renews trees.

In other locations, proactive efforts were made to reforest broadleaf bamboo forests by planting medium-sized seedlings of broadleaf trees at cleared sites (Photo 1-2).

In addition to the reforestation initiatives in broadleaf bamboo areas, patrols were conducted to inspect the deer fences installed to prevent the forest (see Photo 1-3 and 1-4) and seedlings from Sika deer. Repairs were made to the fence whenever damage due to fallen trees or other causes was found 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. The simple fishway on the Banno River, which was installed as part of this project last year and was partially destroyed by heavy rain, was repaired using crowdfunding by Shari Town to design it with a reinforced stone structure (Photo 1-5). As part of this project, we conducted a survey to catch fish using an electric shocker in order to verify whether the fish were using the fishway (Photo 1-6). On the upstream side of the fishway, the presence of Dolly Varden trout was not confirmed, and the importance of the fishway for the movement of fish from the downstream side was reaffirmed. The data obtained from this survey will also be used as basic data for assessing the improvement of the river environment after modifications to the erosion control dam across the main river channel of the Iwaobetsu River.

Photo 1-1. Removal of broadleaf bamboo using heavy machinery. The red fill indicates the plot without the topsoil returned (September 12, 2022).

Photo 1-2. Transplanting medium seedlings of broadleaf deciduous trees in areas where broadleaf bamboo was removed (September 16, 2022)

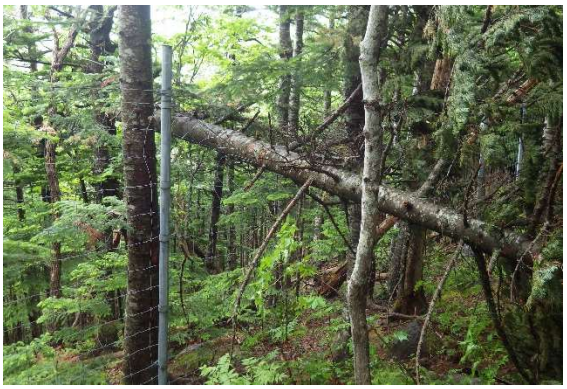

Photo 1-3. A tree on top of the deer fence (May 31, 2022).

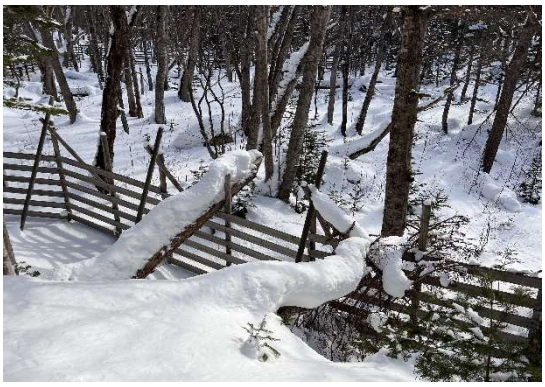

Photo 1-4. A tree on top of the deer fence (February 11, 2023).

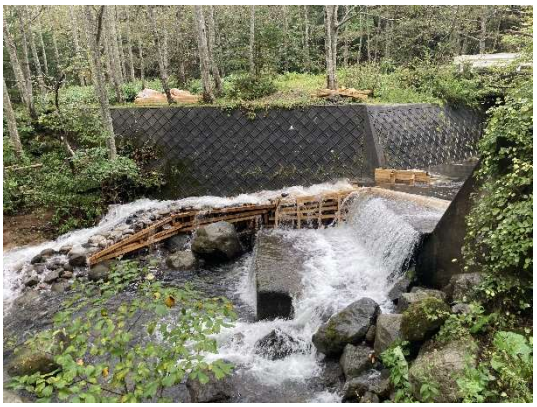

Photo 1-5. Simple fishway on the Banno River after repair (October 11, 2022).

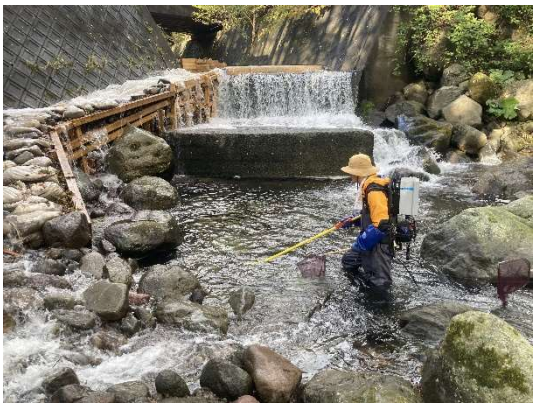

Photo 1-6. Fish species survey using electric shocker (October 11, 2022).

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

In the fall of FY2022 (September), Shiretoko volunteers from Daikin Industries were unable to participate from outside Hokkaido due to the COVID-19 pandemic, but two people from Daikin HVAC Solution Hokkaido who reside in Hokkaido participated in the reforestation work. Volunteer activities in the winter (February) took part as scheduled. To date, this program has hosted 20 volunteer events with a total participation of 207 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 five years, we removed broadleaf bamboo across a total area of 2.5 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 effectively selecting 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 more 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 Land 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 river ecosystems face remaining issues. Improvement work using slits in the two erosion control dams, which are hindering the upstream migration of salmonids, which is the biggest issue, is scheduled to begin in FY2023. Significant progress is expected to be made in improving the river environment in the next few years when this work is completed. In the future, we would like to implement the best solutions based on the assessment of the river environment through fish surveys, while maintaining and managing the fishways on the Banno River so that they can function appropriately.

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.

In addition, we actively hold outreach classes and practical field learning for students from elementary school to high school in Shari Town and the vicinity, in an effort to foster understanding and spread Shiretoko's 100 Square-Meter Forest Movement. To inform the general public about the activities and spirit of this movement, we hold talks on the topic of forestation at the Shiretoko Nature Center.

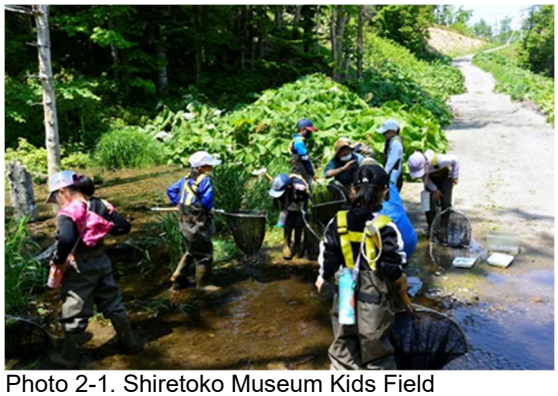

Photo 2-1. Shiretoko Museum Kids Field Observation of Living Things in Rivers

Photo 2-2. Snowshoe trekking at Shiretoko KIDS in Rausu Town

Photo 2-3. Fourth graders at Shiretoko Utoro School learning about nature on the Trust Lands (June 3, 2022).

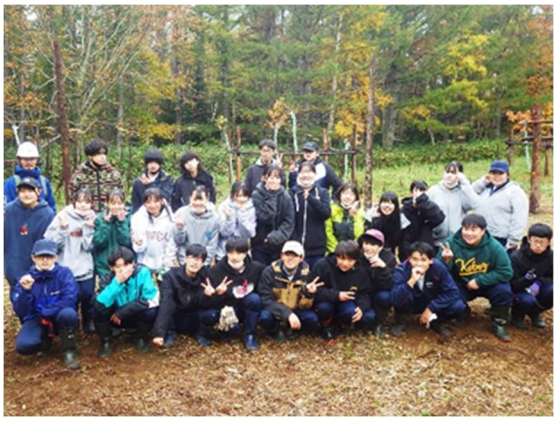

Photo 2-4. Shari High School juniors learning about forestation (October 18, 2022).

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

The project for supporting activities so that humans and bears can coexist in Rausu Town has been implemented since the first phase (FY2011~FY2015). Currently, the second phase (FY2016~FY2024) is underway.

In the first phase, an electric fence was constructed between Kitahama and Aidomari in the town and in the downtown area with the goal of preventing brown bears from entering the area where people live. Although much effort was needed to manage the electric fence to maintain its effectiveness, the fence provided the important outcome of reducing brown bear sightings in the areas it surrounded. On the other hand, Rausu Town's residential areas extend broadly along the coastline, and it is not realistic to construct electric fences in all areas because of budget and maintenance constraints. As a result, there was still a problem in terms of how to deal with brown bears in areas without electric fences.

In the second phase, in addition to the maintenance and management of the electric fence built in the first phase, we set a goal of "creating a town that is less accessible to brown

bears” for areas where electric fences are not installed. Specifically, by cutting down tall bushes such as giant butterbur, Japanese knotwood, and kuma bamboo grass near residential areas, we aim to create an environment where brown bears do not want to visit human settlements by making it difficult for them to hide and use these areas as feeding grounds and migration routes.

Photo 3-1. Installation of electric fences

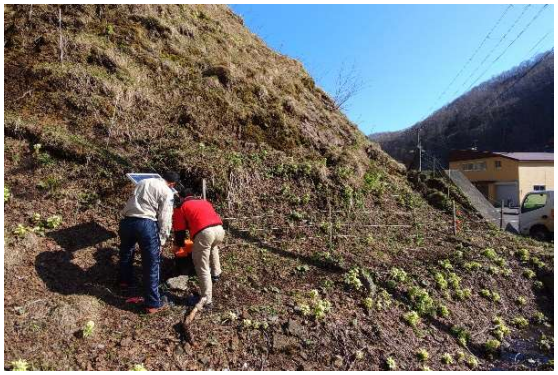

Photo 3-2. Installation of electric fences

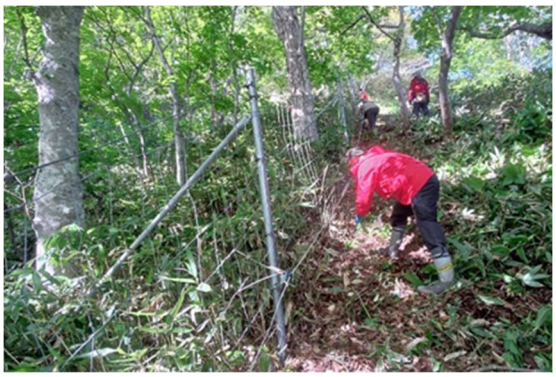

Photo 3-3.
Trimming grasses to prevent loss of electricity when vegetation contacts the electric fence

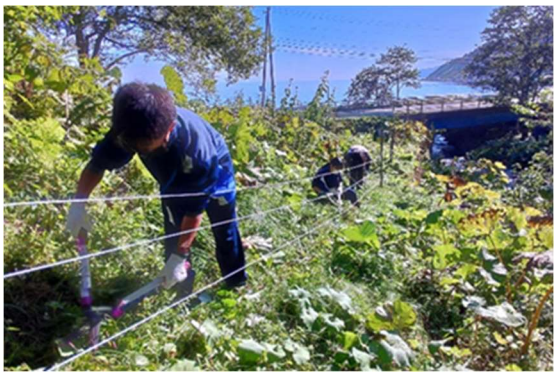

Photo 3-4.
Trimming grasses to prevent loss of electricity when vegetation contacts the electric fence

Photo 3-5.
Local residents and company employee volunteers clearing bushes to create an open space