ACORNS TO OAKS

Kids help ecologist renew Japan's 'real' forests

By SHOKO AZUMA
Staff Writer

"First of all, I would like you to know the difference between a real forest and a fake forest," Akira Miyawaki tells participants at a tree-planting ceremony at the Masaki dam in Kamikatsu, a mountainous area in Tokushima Prefecture. About 80 locals, including many elementary school children, listen attentively as he speaks.

It's a cold Sunday morning in December. The 78-year-old forestry ecologist, wearing rubber boots and cotton work gloves, continues: "Maybe you've learned at school that about 70 percent of our country is covered with forests. Unfortunately, however, most of our forests are fake or artificial."

What Miyawaki means by a "real" forest is one populated by trees indigenous to the region. Such a forest is often dominated by members of the laurel family including *kashi* oak, *shii* or *shiinoki* castanopsis and *tabunoki* laurel.

A "fake" forest is one overrun by timber-producing cedar or *hinoki* cypress planted after World War II. Now, indigenous forests account for only 0.06 percent of land once covered by laurel forests, an area where 92 percent of Japanese live, according to Miyawaki.

"Look at the tops of those trees over there," Miyawaki tells his audience. "That area with the round-topped trees is an original laurel forest. The one with the pointy tops is an artificial cedar forest."

Miyawaki is a professor emeritus at Yokohama National University and the director of the Japanese Center for International Studies in Ecology (JISE). He is known for his reforestation activities based on the concept of "potential natural vegetation," or what he calls, "native forests of native trees." He advocates the regeneration of forests of indigenous trees.

His method is unique: After collecting acorns from various evergreen broad-leafed trees, he plants them in pots. The saplings grow for one and a half to two years until they develop a firm root system. Miyawaki then replants the 30- to 50-centimeter-high saplings randomly and densely and lets them compete—may the strongest trees survive.

At the tree-planting event, he says: "We are going to plant these indigenous trees today. Look carefully. This is *arakashi* (Japanese blue oak). Repeat after me in a loud voice. Arakashi, arakashi, arakashi. And this is shiinoki, shiinoki, shiinoki." The children's eyes shine as they repeat the names.

Next, the ecologist explains how to plant them: "Treat them carefully because they are breathing. Cover their roots with soil gently as you would for a baby with a blanket."

Finally, he says: "Mix, mix, mix. Plant them at random. Don't select just the ones you like. It's crucial to mix various kinds of trees, just like a human society. Plants need to be patient with each other in such a situation. Good ones will survive even under harsh conditions." He adds with a grin, "It is really cold today, but I'm sure you'll be sweating after planting them. Remember: Mix, mix, mix."

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Miyawaki moved between the sapling planters offering instructions. He directed the adults to help the kids dig in the hard soil. He spotted a top municipal official just standing around watching. Miyawaki would have none of it and told him to get to work. "Leaders should take the lead in implementing the project."

The ecologist makes it a rule to visit planting sites and direct operations himself. However, for this planting he left the advance work to local ecologists and officials. Before the ceremony, he inspected the planting venue. He wasn't happy with what he found. Many tabunoki trees were growing indigenously near the venue. However, the officials had not brought any tabunoki saplings with them. Quietly angry, he asked, "Didn't you see those tabunoki trees over there?"

Despite the missing tabunoki, the participants planted 22 types of trees. They worked quickly—in about 90 minutes, 1,100 saplings were planted on a slope at the dam reservoir.

Some of the children whined at first, complaining that it was too cold and that they wanted to go home. However, after they got involved in the planting, there was almost unanimous agreement that, as one student put it, the experience was "more fun than I expected."

Miyawaki glances at the smiling kids and says: "I'm concerned about the increasing number of juvenile suicides due to bullying these days. Many young people don't fully understand how precious a human life is. Planting trees helps them realize the weight of life by touching and feeling the plants struggling to live."

In Tokushima Prefecture, about 300,000 trees have been planted at more than 30 locations based on the Miyawaki method, according to a local official.

"I think it is good that the prefectural government, NPOs and local residents cooperate closely in Tokushima Prefecture," Miyawaki says. "Now, I would like to export this well-developed system overseas."

YUKO YAMADA/ STAFF PHOTOGRAPHER

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Clockwise from left: Akira Miyawaki explains how to plant saplings in Kamikatsu, Tokushima Prefecture; the 78-year-old ecologist poses in a forest he helped create at Yokohama National University; Miyawaki plants a sapling in Kamikatsu.

Miyawaki started his tree planting in 1971 when Nippon Steel Corp. asked him to develop "environmental forests" around its new steel plant in Oita Prefecture. These forests would absorb both sound and unwanted odors.

Since, he has worked with residents, companies and administrations in many prefectures to plant trees at more than 1,400 sites, not only in the mountains, but also at shopping centers, along the side of roads and at factories.

He cites the benefits of native forests: They don't need care three years after planting, while artificial forests need to be tended indefinitely; indigenous trees are quake-resistant because of their deep and straight roots as well as more fire-resistant, as proved during the 1923 Great Kanto Earthquake and the 1995 Great Hanshin Earthquake.

In November, Miyawaki won the 2006 Blue Planet Prize—often dubbed the Nobel Prize for the environment—from the Asahi Glass Foundation for his contribution to restoring disaster-resistant indigenous forests as well as reconstructing tropical forests overseas.

He was the first Japanese to receive the award since it was established in 1992. "I'm really glad my low-profile projects have been recognized as worthwhile," he says.

Miyawaki was a sickly child while growing up in Okayama Prefecture. Suffering from vertebral tuberculosis, he was told that he wouldn't live to see 20. Unable to participate in most childhood activities, he spent many days indoors watching farmers outside weeding their rice paddies. This experience eventually led Miyawaki to study plants, especially weeds.

Later, he chose weed ecology as his academic specialization, pursuing studies at various institutions. He remembers a university mentor warned him: "If weeds are your main field of study, expect to find yourself outside the mainstream in academic societies."

The mentor was right. Nobody paid much attention to his work until German professor Reinhold Tuxen looked at his research. Tuxen, who died in 1980, was director of the Federal Institute for Vegetation Mapping in Stolzenau, Germany. Miyawaki received a two-year scholarship at the institute from the German government and the Humboldt Foundation in 1958.

Under Tuxen, Miyawaki studied phytosociology (the study of the characteristics, classification, relationships and distribution of plant communities) and the concept of "potential natural vegetation," which is natural vegetation supported by existing land conditions without human intervention.

Miyawaki's interest quickly expanded from weeds to forests to a global ecosystem.

Tuxen emphasized the importance of fieldwork. He often said: "Use your body as an instrument. Inspect forests using your five senses to the fullest." Miyawaki says he has followed his German mentor's teachings for nearly 50 years.

The most difficult part of his work is determining what the potential natural vegetation is for individual locations. "It's like trying to discover the real face of a woman wearing thick makeup," he says, smiling.

In the beginning, Miyawaki had no clue. "I felt it was nearly impossible—like the art of the ninja," he says.

One day in Germany, while thinking about *chinju-no-mori* or the indigenous groves found around shrines and temples in Japan, he had an inspiration. Since chinju-no-mori are considered sacred, they often remain untouched for generations. Miyawaki hoped he could discover an area's original vegetation by studying local chinju groves.

Returning to Japan in 1960, he set to work and eventually proved he was right. Although his study didn't draw attention for 10 years, Miyawaki kept at it, applying the principle to vegetation nationwide.

He says he doesn't regret being ignored for a decade. On the contrary, he says it helped his research. He compiled 10 volumes of floristics, "Vegetation of Japan," between 1980 and 1989, with help from 116 researchers nationwide.

In the 1990s, he expanded his reforestation activities overseas. For example, he has committed himself to helping restore tropical rainforests on Borneo and in Brazil's Amazon basin.

In China, Miyawaki took part in a big tree-planting project along the Great Wall between 1998 and 2000. He says he was impressed that about 4,000 Japanese paid their own way to take part in the project. About 3,200 Chinese were also involved.

Through these tree-planting activities, Miyawaki has come to feel even more strongly that human beings are just a part of the global ecosystem. "No matter how rich you are, you can't live without forests," he says.

Miyawaki says: "Everyone in the world can be a major player in reforestation efforts to protect our own lives. (Under the Chinese kanji character system), if you plant two trees, you have created a *hayashi* or grove. Three trees make a *mori* or forest. Plant five trees and you have a *shinrin* or woodland. What if 6.5 billion people on Earth each planted 10 saplings? That could make a big difference. I'll continue to plant trees for at least the next 30 years until I'm 107."

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AKIRA MIYAWAKI
Forestry ecologist