Globally Important Agricultural Heritage Systems (GIAHS)

Application

Takachihogo-Shiibayama Mountainous Agriculture and Forestry System

- A Cradle of Japanese Mythology Nurturing Forests and Traditional Culture -

GIAHS Promotion Association of Takachihogo-Shiibayama

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Summary Information

Name/Title of Agricultural System:

Takachihogo-Shiibayama Mountainous Agriculture and Forestry System:

A Cradle of Japanese Mythology Nurturing Forests and Traditional Culture

Requesting Agency/Organization: GIAHS Promotion Association of Takachihogo-Shiibayama Area

Country/Location/Site: Miyazaki Prefecture, Japan –

1) Takachiho Town, 2) Hinokage Town, 3) Gokase Town, 4) Morotsuka Village, 5) Shiiba Village

This Site of farming and mountain villages, located in the northern part of the Kyushu-Sanchi in the center of the Japanese island's Kyushu region has long been known as Takachihogo-Shiibayama. Based on a shared vision of a Forestopia (Forest-Utopia) the Site is pursuing development that revolves around forest conservation and interchange between cities and rural communities.

Access to capital city or major cities:

Tokyo International Airport (Haneda Airport) to Kumamoto Airport: 90 minutes by air

Kumamoto Airport to Takachiho Town: 90 minutes by car

Area: 1,410km^2

Agro-Ecological Zones in Site: Paddy field and dry field farming in temperate zone

Topographic Features: Mountains and valleys

Climate Type: Temperate humid climate

Population: Approx. 27 thousand

Main Sources of Livelihood: Agriculture and forestry, tourism

Ethnic/Indigenous Population: None in particular

Summary of Agricultural System:

The Takachihogo-Shiibayama Site (hereinafter referred to as "the Site") is a steep mountainous site enclosed by the peaks of the Kyushu-Sanchi, ranging from 1,000 to 1,700 meters in elevation. Mentioned in ancient Japanese chronicles such as the *Kojiki* and *Nihon Shoki,* myths and traditions are cherished even today. In this tough, forest-enclosed environment where flat land is extremely sparse, the people have established a distinctive and sustainable composite system of agriculture and forestry in the mountainous Site through a combination of labor and ingenuity.

Today, forest resources are dwindling around the world, and the negative impact of this on biodiversity and the environment is a concern. The reasons for the decline include reclamation of forest for farmland, non-traditional and environmentally harmful shifting (slash-and-burn) cultivation practices, and excess timber harvesting. In this Site, on the other hand, through the establishment of a composite management system of agriculture and forestry which combines timber production in planted forests where long-term management is practiced with diverse farming that generates revenue each year (shiitake mushroom cultivation, terraced rice growing, beef cattle raising, tea cultivation, etc.), a balance has been found between the forest and agricultural production. In this way, households earn their livelihood without using up excess forest through timber harvesting, reclamation, etc., and forest resources are successfully conserved, making it a valuable model for the world. This balance is symbolized by the distinctive mosaic-pattern forest landscape—in which conifers such as Japanese cedar and *Hinoki* cypress, deciduous broadleaf trees such as Sawtooth oak, and evergreen broadleaf trees spread out in a patchwork pattern—formed through the joint management of timber production and shiitake mushroom cultivation forest, which is particularly apparent in the eastern part of the Site. In addition, in one area, the forest is used in a cyclical manner, conserving traditional, and environmentally-friendly Japanese shifting cultivation.

Biodiversity is also successfully conserved through the cultivation of deciduous broadleaf trees such as Sawtooth oak for shiitake mushroom production alongside conifers such as Japanese cedar and *Hinoki* cypress. Moreover, rare animals and plants, such as the Japanese Cypripedium, make their habitat in certain conifer planted forests. This system has also fostered extremely valuable cultural traditions such as *kagura*—ritual Shinto[1] dances performed by entire villages depicting the gods of Japanese mythology who live in the Site's forest-covered mountains, to thank the gods for their blessings and pray for a bountiful harvest.

Since 1988, the local people, with a growing passion for maintaining forest resources and developing the Site, have been devoting their energy to not only maintaining the traditional mountainous composite management system of agriculture and forestry but also to promoting interchange between cities and rural communities, providing experiential learning activities, and so forth, based on a shared Forestopia vision that will create a spiritually rich lifestyle by effectively leveraging the abundant forest resources and the traditional life and culture arising from them.

As the above indicates, this system is not just a distinctive mountainous composite management system of agriculture and forestry associated with a precious traditional culture—it is also a valuable model for the world, showing the harmony between the forest and agriculture (including forestry).

[1] The Shinto religion (Shintoism) is an indigenous religion of the people of Japan. The people worship nature and gods living there. It is related to Japanese mythology found in ancient chronicles like the Kojiki and Nihon Shoki written in the 8th century.

Description of Agricultural System

I. Characteristics of Proposed GIAHS

Introduction—The Site's Composite System of Agriculture and Forestry and Its Global Importance: Finding a Good Balance Between Forest Conservation and Agricultural Production through the Distinctive Composite System of Agriculture and Forestry in the Mountainous Area

According to the Global Forest Resources Assessment 2010 (FRA2010) prepared by the FAO, deforestation is continuing at an alarming level of 13 million hectares per year worldwide, and the resulting loss of biodiversity and negative impact on the global environment is of great concern. One reason for the deforestation is the conversion of forest land into land for agricultural use, mainly in tropical forests. Other reported causes of deforestation include non-traditional and non-cyclical shifting cultivation practices and excess timber harvesting.

In the Takachihogo-Shiibayama Site, on the other hand, through the practice of a composite system of agriculture and forestry which combines timber production in planted forests where long-term management is practiced with diverse farming that generates revenue each year (shiitake mushroom cultivation, terraced rice growing, beef cattle raising, tea cultivation, etc.), a balance has been found between the forest conservation and agricultural forestry, so that households earn their livelihood without using up excess forest through timber harvesting, reclamation, etc., and forest resources are successfully conserved. In addition, in one area, the forest is used in a cyclical manner by maintaining traditional, environmentally friendly Japanese shifting cultivation. Thanks to good management, rare animals and plants make their habitat in some planted forests, and biodiversity is also successfully conserved through the cultivation of deciduous broadleaf trees such as Sawtooth oak for shiitake mushroom production alongside conifers such as Japanese cedar and *Hinoki* cypress. Furthermore, this system has fostered valuable cultural traditions, such as *kagura*—ritual Shinto dances performed by entire villages depicting the gods of Japanese mythology who live in the Site's forest-covered mountains, to thank the gods for their blessings and pray for a bountiful harvest of five staple grains.[2]

As the above indicates, the Takachihogo-Shiibayama mountainous composite management system of agriculture and forestry is not just a distinctive system associated with a precious traditional culture—it is also a valuable model for the world, showing how to find a balance between the forest conservation and agricultural production.

(1) Geographical features and landscape

The Site is located in the northwestern part of Miyazaki Prefecture, in the Kyushu-Sanchi northern district. It is a mountainous site surrounded by steep mountains that make up Kyushu-Sanchi (elevation of between 1,000 and 1,700 meters), including Sobosan (elevation of 1,756 meters), its main peak. It was called Takachihogo (Takachiho Town, Hinokage Town, Gokase Town and Morotsuka-Village) and Shiibayama (Shiiba Village) of Usuki County of Hyuga Province from ancient times, and consists of three towns and two villages.

In terms of climate, Takachiho Town is located at an elevation of 350 meters and is relatively cool and rainy, with an average annual temperature of around 14 degrees and annual precipitation of around 2,200 mm (*1).

About 92% of the Site is forested, but about half of which is planted forest. Arable land accounts for only a scant share of the Site at about 3%, but distinctive agriculture is conducted, exemplified by the rice terraces built on the steep slopes.

Table 1: Total Forest and Farmland Area in Site (*2)

Total area	Forest area	Farmland area
141,056 ha	129,614 ha	4,059 ha
(100.0%)	(91.9%)	(2.9%)

[2] This refers to the following five staple grains: rice, barley, beans, foxtail millet, and common millet.

Approximately eight-tenths of the forest is privately owned, of which about 58% is planted forests. In the case of conifers, the primary tree species are Japanese cedar and *Hinoki* cypress, while in the case of broadleaf trees, the main species is Sawtooth oak for shiitake mushroom cultivation (*3).

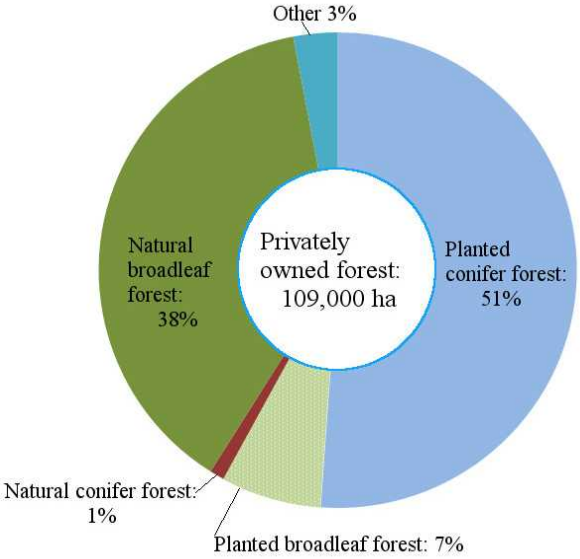


Figure 1: Breakdown of Site's Privately Owned

The beautiful scenery that defines the Site—a tapestry woven from the steep forest-covered mountains and the streams that spring from them, along with the scattered villages and rice terraces—has been nurtured by the agricultural and forestry activities of the local people. Notably, in the vicinity of Morotsuka Village, located in the Mimi River basin in the southern district of the Site, a characteristic landscape known as "mosaic-pattern forest" has been formed, where conifers such as Japanese cedar and *Hinoki* cypress for timber production, deciduous broadleaf trees such as Sawtooth oak used in shiitake mushroom cultivation, and evergreen broadleaf trees spread out in a patchwork pattern. Along the Gokase River in the northern district of the Site is the Takachiho Gorge, whose cliffs range in height from 50 to 100 meters. The gorge has been designated by the Japanese government as a Scenic Spot and a Natural Monument. Rice terraces spread out above the gorge, and are irrigated with water drawn from sources deep in the mountains, far from the Gokase River, whose waters are difficult to be used because of the elevation difference. The fields and their irrigation works were built with a huge amount of labor. The slopes in the vicinity form a beautiful landscape, combined with cutting grasses to maintain the rice terraces and obtain roughage for livestock production.

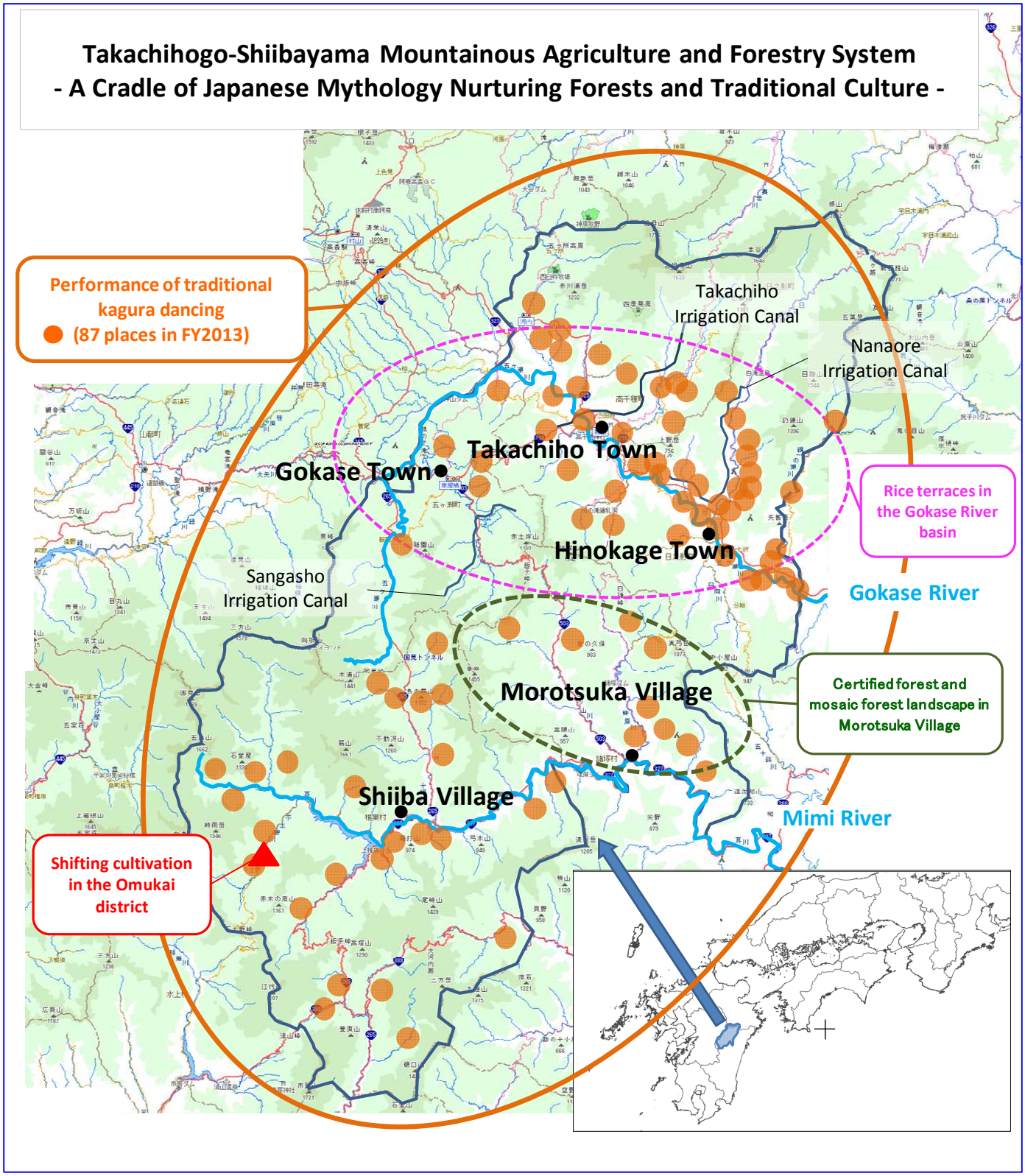


Figure 2: Map of the Site

Photo 1: A Village in the Site

Photo 2: Mosaic Forest in Morotsuka Village

Photo 3: Takachiho Gorge

Photo 4: Rice Terraces along the Gokase River

(2) A sustainable system for agriculture and forestry in the mountainous area

Due to its rugged mountainous terrain, the Site has very little flat land fit for farming. There is a scattering of relatively small communities surrounded by forests. More than 70% of these communities have no more than 30 houses. In this harsh environment, through a combination of the people's labor and ingenuity, a distinctive and sustainable composite system of agriculture and forestry has been established that combines managing the forest and obtaining forestry products by hand along with diverse agricultural practices suited to the mountainous environment.

The system's various farming practices include sustainable shifting cultivation, which was widely practiced until the 1950s. This involved setting fire to limited plots of land (approx. 0.5 to 1 hectares) in some parts of the forest while ensuring that the forest was then allowed 20 or 30 years to regrow. In addition to the cultivation of grains such as buckwheat and Japanese millet, wet-rice cultivation is practiced on the steep mountainside slopes by constructing rice terraces fed by irrigation canals extending dozens of kilometers to sources nurtured by the forest. Other forms of cultivation practiced include: raising beef cattle using roughage (mainly grass) collected from the forest and nearby fields, cultivating shiitake mushrooms using broadleaf trees such as Sawtooth oak, and growing tea by exploiting the mountain climate with its wide variation in temperatures.

Today, traditional shifting cultivation is practiced in Shiiba Village, while approximately 230,000 m^3 of timber is produced per year by balancing forest conservation with active forestry production (*5). This is symbolized by the distinctive

mosaic-pattern forest landscape in which conifers such as Japanese cedar and *Hinoki* cypress, deciduous broadleaf trees such as Sawtooth oak, and evergreen broadleaf trees spread out in a patchwork pattern formed by joint management of timber production and shiitake mushroom cultivation forest; this type of landscape is especially apparent around Morotsuka Village, the first-ever area in Japan's to be granted FSC forest certification. The Site continues to develop its sophisticated composite system of agriculture and forestry adapted to the mountainous environment and harness the bounty of the forest: for example, in the Site centering on Takachiho Town, Hinokage Town, and Gokase Town, a group of rice terraces covering over 1,800 hectares and one of Japan's leading "*sanpuku*" (mountainside) irrigation canal networks, extending for over 500 km, have been established, and the Site also produces high-quality *wagyu* (Japanese beef) from relatively small, carefully raised herds fed with roughage and the like gathered in the Site, for which it has received a Prime Minister's Award.

Figure 3: The Site's Mountainous Composite Management System of Agriculture and Forestry

<u>Features of the diverse agricultural and forestry practices that comprise the composite system:</u>

① Balance between forest conservation and management with active timber production, symbolized by mosaic forest (detailed explanation in Section I-3, "Knowledge Systems and Adapted Technologies")

Since long ago, the Site has practiced forest conservation and management through cyclical forestry practices that regenerate trees through the renewal of germination by means of shifting (slash-and-burn) cultivation practices[3] after they have been felled for the purpose of producing Japanese zelkova timber, raw wood for shiitake mushrooms, etc. Since the 1950s, with social conditions having changed significantly due to the energy revolution, rapid growth in housing demand in urban areas, etc., and mass conifer forestation being recommended all over Japan, there has been a shift in tree species

[3] A method of developing forest that exploits trees' ability to sprout from cut stumps and roots after being cleared.

toward conifers, and in Takachihogo-Shiibayama, timber production has reached the level of 230,000 m^3 per year by balancing forest conservation and timber production, while at the same time maintaining traditional culture in most of the Site.

The mosaic forest in which conifers such as Japanese cedar and *Hinoki* cypress, deciduous broadleaf trees such as Sawtooth oak, and evergreen broadleaf trees spread out in a patchwork pattern, which is particularly apparent in Morotsuka Village in the eastern part of Takachihogo-Shiibayama, may be considered a characteristic expression of the Site's well-balanced forest management practices. Moreover, the entire Morotsuka Village area—the first in Japan to receive FSC-C012945 forest certification (*6) from the Germany-based Forest Stewardship Council® (FSC®)—implements socially beneficial, economically sustainable forest management that supports environmental conservation. In addition to forest management, a network of roads closely linked to life has been developed in the village, with a density of approx. 62 m/ha—the highest in Japan (*7). The Site is also conducting globally pioneering initiatives when it comes to the cultivation of shiitake mushrooms using raw wood such as Sawtooth oak and Japanese oak produced by managed forests—for example, it received the world's first-ever FSC-C001800 CoC (Chain of Custody) certificate from the FSC (*8) for its processing and distribution.

② Traditional shifting cultivation still practiced today (detailed explanation in Section I-3, "Knowledge Systems and Adapted Technologies")

Traditional Japanese shifting cultivation is a cyclical farming practice that involves clearing relatively small forest plots of around 0.5 to 1 hectares, creating arable land by burning away the undergrowth (by setting fire to it), cultivating buckwheat, Japanese millet, adzuki beans, soybeans, etc., for about four years, then restoring the forest by always allowing a long fallow period of around 20 to 30 years and, once the plot's fertility has returned, starting the shifting (slash-and-burn) cycle again. Compared to shifting cultivation carried out in other mountain areas in south-east Asia, this practice is distinguished by the fact that it is sustainable and environmentally friendly due to the implementation of a four-year crop rotation system and the long fallow period that is always provided after burning a relatively small area.

Photo 5: Sowing seeds in a burnt field

Japanese shifting cultivation farming is said to have its roots in the extensive farming of the Jomon Period (12,000 - 300 BC), and prior to the modern era, fields under shifting cultivation exceeded 240,000 hectares in area nationwide, and even as recently as 1950, the number was around 50,000 to 60,000 hectares (*9). However, due to social changes, that figure has decreased rapidly.

In the Tohoku region and elsewhere, there continue to be shifting cultivation fields used to cultivate single crops such as red beets, but the Omukai district of Shiiba Village in this Site maintains traditional shifting cultivation, whereby the locations to be burned change every year, crops are rotated every four years or so, and a long fallow period is provided. It has been said that this is the only place in Japan still carrying on this tradition, making it a valuable example for others (*10).

Photo 6: Rice terraces in the Site

③ A leading Japanese rice terrace farming area

Since it is a Site of steep mountainous terrain, many of the Site's rivers form deep ravines, which made it difficult to obtain water for agricultural use. As a result, prior to the modern era, wet-field rice production was rare. Most farmland was burnt or dry fields, and there was even some upland rice.[4] However, the people longed to cultivate rice in wet paddies, which provide higher, more stable yields and produce better-tasting rice, so despite the adverse topographical conditions, which meant that water had to be obtained from sources dozens of kilometers away deep in the mountains, they devoted considerable effort to constructing a network of irrigation canals and rice terraces on the steep mountain slopes.

According to records, irrigation canals and rice paddies were developed in the Site starting in the first half of the modern 1600s, with the rate of building accelerating in the Meiji Period (1868–1912) and Taisho Period (1912-1926), so that today, there are mountainside irrigation canal networks exceeding 500 kilometers in length (*11) and rice terraces exceeding 1,800 hectares (*12). Of the Top 100 Terraced Paddy Fields (actually 134 locations in total) recognized by the Ministry of Agriculture, Forestry, and Fisheries, seven are located in the Takachihogo-Shiibayama Site (*13).

For the above reasons, it is one of Japan's leading rice terrace farming areas.

④ A major Japanese beef cattle (Japanese Black) raising area

In Japan, including the Takachihogo-Shiibayama Site, prior to the Meiji Period (1868–1912), the main types of meat that were eaten were venison, boar, and the like obtained by hunting. There was no strong tradition of raising livestock for eating; animals were instead reared primarily for the purpose of providing labor and collecting dung for fertilizer. With the growth in beef consumption from Meiji Period onward, beef cattle have become a major stream of agricultural revenue in this Site where arable land is scarce, and there is a history of striving to improve the livestock, such as introducing various higher-quality breeds from outside the Site in 1883 (*14).

Photo 7: Beef cattle from the Site

Today, beef cattle occupy a vital position in the Site's agriculture industry: for example, of the 3,928 farming households in the Site, 1,402 are involved in beef cattle raising, and there are 14,580 cattle being reared for beef, accounting for around four-tenths of the Site's agricultural output (*15). In terms of distinguishing characteristics, most of the herds are relatively small in scale; in particular, around 90% of breeding farms[5] are small operations rearing nine cattle or less (*16). There are also many farm households that combine livestock raising with crop farming or forestry activities. Cattle are reared by making use of the Site's biological resources: some roughage is provided by wild cogon grass, silver grass, etc., from the forest, nearby fields, and slopes of rice terraces, while some graze in forest glades.

In 2007, the Site's Japanese cattle received the Prime Minister's Award in the cattle-breeding category at the National Competitive Exhibition of Wagyu, and at the same event in 2012, the Site achieved outstanding results (e.g., helping Miyazaki Prefecture to claim a second straight victory) and received much attention for producing high-quality beef cattle by maintaining excellent rearing management techniques while having many small-scale breeding farms.

[4] "Upland rice" is rice cultivated in dry fields. Compared to paddy-grown rice, its yield and taste are inferior.
[5] These are farms that operate by raising cows and the calves they birth, then selling the calves.

(3) A sustainable composite system of agriculture and forestry that conserves biodiversity

The majority of the Site's planted forest is conifers such as Japanese cedar and *Hinoki* cypress. Thanks to most of them—including the Morotsuka Village area, which received FSC-C012945 forest certification from the FSC®—being appropriately managed through the implementation of weeding, thinning, cleaning cutting, etc., at optimal intervals, they are conserving local biodiversity. In particular, some ten rare plant and animal species listed in Miyazaki Prefecture's Red Data Book, including the Japanese Cypripedium and Calanthe Sieboldii, are found in certain forests despite the fact that they are planted cedar forests, and these have been designated as important habitats in the prefecture (*17).

In addition, while the Site's rice terraces and the mountainside irrigation canals that support them are secondary natural features produced by human labor, they are inhabited by many rare animals and plants suited to this environment, especially amphibians such as amber salamanders, fish, and aquatic insects, so one may say that biodiversity is being maintained thanks to rice terrace agriculture.

There are also high-elevation grasslands in the Site, which are maintained through controlled burning and weeding for the purpose of obtaining roughage for farming (livestock raising) and are inhabited by rare animals and plants such as the star lily.

(4) Traditional culture related to agriculture and forestry

As a site related to Japanese mythology found in ancient chronicles like the *Kojiki* and *Nihon Shoki*, the Site has many landmarks associated with myths and folklore, along with shrines and small Buddha figures throughout the hills and fields. Given the harsh conditions of life in a mountain farming or forestry village, people's faith runs deep and the Site is steeped in its own unique living farming and forestry-related culture, including old agricultural rituals like the Shishikake Festival and typical Japanese folk songs (farmers' work songs) like "Kariboshikiri Uta" and "Hietsuki Bushi." In addition, in 1909, Kunio Yanagita, the founder of Japanese folkloristics, wrote what is considered the first published work in the field, *Nochi no Kari Kotoba no Ki* ("Notes on Traditional Hunting Lore"), which deals extensively with the folk customs of the Takachihogo-Shiibayama Site. The Site could therefore be described as the birthplace of Japanese folkloristics, and its valuable customs are still an active part of daily life today.

Photo 8: All-night *yokagura* dancing in Takachiho

A common cultural tradition distinctive to the Site is *kagura*—ritual Shinto dances performed by entire villages depicting the gods of Japanese mythology who live in the Site's forest-covered mountains, to thank the gods for their blessings and pray for a bountiful harvest and so forth. Rooted in the local food production system comprised of hunting, burnt-field, dry-field and wet-field grain production, and water, the Site's *kagura* began as a rite praying for abundant harvests of staple grains, with the oldest recorded performances dating back to the 12th century. There are many villages across Takachihogo-Shiibayama maintaining diverse forms of *kagura* with a long tradition; in fiscal 2013 alone, performances were held in 87 locations, in an area with a population of only 27,000 people or so. The characteristics of the Site's *kagura* vary from village to village and the tradition is greatly valued for the beauty and mystery of the dancing, with different types being classified as *Takachiho no yokagura* (a national Significant Intangible Folk Cultural Asset), Morotsuka *kagura* (a prefectural Intangible Folk Cultural Asset), Shiiba *kagura* (a national Significant Intangible Folk Cultural Asset), etc.

As well as being an important spiritual pillar for local people, *kagura* is a ceremonial rite which is vital in cementing the

bonds of *yui*[6]—the system of mutual co-operation that maintains village communities. (N.B.: This is explained in detail in Section II, "Other Social and Cultural Characteristics Pertinent to the Management of the Agricultural System").

Thus, as described above, there is a valuable traditional culture associated with the Site's agriculture and forestry, which is extremely important as a cultural and spiritual pillar of Japan, since it conveys the nation's mythologies to the people of today.

(5) Contemporary importance: Supporting the people who make use of the forest, regional development, and traditional culture

The forest provides fundamental support to the lives of people in the Site and is the source of various forms of traditional culture. Since 1988, the local people, with a growing passion for maintaining and developing these, have deployed their creativity and ingenuity to effectively leverage the abundant forest resources and traditional life and culture nourished by them. Based on a vision of a Forestopia (Forest-Utopia) that will create a spiritually rich way of life which provides peace and tranquility to people in today's increasingly urbanized society, they are pursuing regional development that revolves around conserving the forest and the traditions it has bred, creating new culture, and promoting interchange between cities and rural communities while providing distinctive forest-oriented nurturing of human resources, including the establishment of schools such as Gokase Secondary School, Japan's first public integrated middle and high school.

[6] *Yui* refers to ongoing co-operative work required for daily life, such as rice planting, which is performed by sharing out labor on an equal basis, or to the mutual support system established for this purpose.

1. Food and Livelihood Security

In the Takachihogo-Shiibayama Site, agriculture and forestry is an important industry, and given that 32% of all employed people work in it (*18), greatly exceeding the national average of 4%, it can be considered an important means of livelihood.

As of 2006, the total agricultural product output was ¥8.7 billion. In addition to raising beef cattle and growing rice, cultivation of vegetables and flowers and ornamental plants that benefit from the cool summer climate also account for a significant proportion of this total. Various types of agricultural products are grown as well, including the cultivation of tea and fruit trees such as chestnuts and kumquats.

With regard to forestry, around 80% of the Site's forest is privately owned and actively managed, with the total forestry output being ¥2.6 billion (*19).

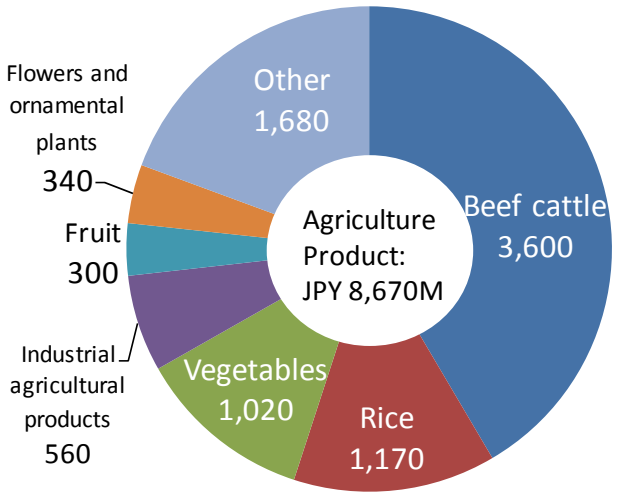


Figure 4: Agricultural Product Output of the Site (in Millions of ¥)

2. Biodiversity and Ecosystem Function

(1) Agricultural diversity

① Diversified agricultural production

Despite being a mountainous site with little arable land, a diverse range of agricultural products are grown, centering on wet-rice cultivation in rice terraces, but also including shiitake mushroom cultivation, tea, fruit trees such as chestnuts, vegetables such as cucumbers and tomatoes, flowers and ornamental plants like chrysanthemums, etc. Notably, the Site produces some 370 tons of dried shiitake mushrooms (*20), representing over half of all dried shiitake mushrooms produced in Miyazaki Prefecture, Japan's second-largest producer, and making it one of the nation's key production areas.

Table 2: Key Agricultural Products of Site (2012)

Wet-field rice	Dried shiitake mushrooms	Fresh tea leaves	Chestnut	Cucumber
5,168 t	370 t	1,144 t	239 t	1,174 t
Tomatoes	Chinese cabbage	Cabbage	Eggplant	Chrysanthemums
1,154 t	475 t	307 t	301 t	4,423,000

There are many farm households within the Site that conduct both agriculture and forestry activities, which are known as farm-and-forestry households. The breakdown of agriculture and forestry activities varies depending on the circumstances of the individual household, but in a survey of communities in Morotsuka Village, where the Site's composite system of agriculture and forestry is the most developed, the average farm-and-forestry household owned 32.1 hectares of forest (around 30% of which is Sawtooth oak forest for shiitake mushroom cultivation, while the remainder is conifer forest such as Japanese cedar), 0.218 hectares of rice paddies, 0.013 hectares of tea fields, and 2.1 beef cattle and produced 198 kg of dried

shiitake mushrooms per year. In terms of gross revenues from agriculture and forestry, 40% is obtained from timber production, 36% from shiitake mushroom cultivation, 18% from other agricultural activities, and 6% from subsidies and the like (*21). As this suggests, these households pursue stable operations by carrying out diversified agriculture and forestry while maintaining two types of forest: broadleaf forest (e.g., cedar) and deciduous broadleaf forest (Sawtooth oak, etc.).

Table 3: Average Business Activities per Household in One Morotsuka Village Community (32 Farm-and-Forestry Households)

	amount	Unit
Forest	32.1	ha
Conifer forest (cedar, etc.)	22.5	ha
Broadleaf forest (Sawtooth oak, etc.)	9.6	ha
Rice paddy	0.218	ha
Tea field	0.013	ha
Beef cattle	2.1	head
Shiitake mushroom production (annual)	198.0	kg

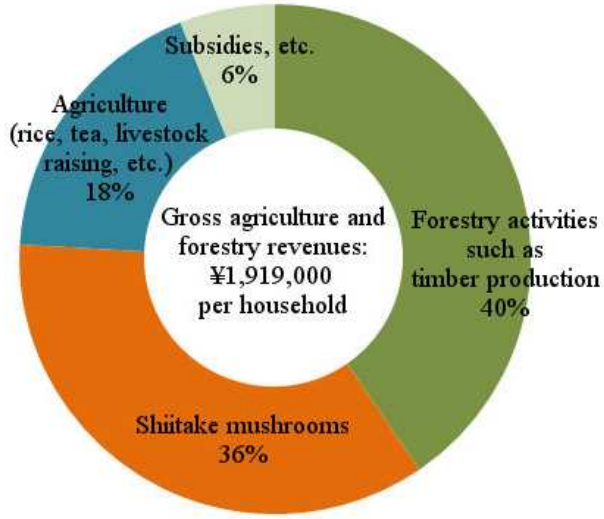


Figure 5: Average Breakdown of Gross Agriculture and Forestry Revenue in One Morotsuka Village Community (32 Farm-and-Forestry Households)

② Traditional crops species grown with shifting cultivation

In Shiiba Village, there are shifting cultivation practices that are rare even in Japan, and through these farming methods, the growing of unique traditional crops such as certain varieties of buckwheat (known locally as *soma* instead of the more common *soba*) and Japanese millet are maintained. In order to increase their survivability in the event of a fire or other disaster, grains and seeds are stored in warehouses far from people's homes. It is said that Japanese millet stored here can be preserved for extended periods of up to 50 years, and are also considered highly important as hardy plants. These forms of cultivation and storage may be considered traditional knowledge that improves resilience (to disasters, etc.) in the tough mountainous environment.

Photo 9: Seeds of Soma (buckwheat), traditional species

Photo 10: Traditional Japanese millet (Source: *Grandma Kuniko and the Mysterious Forest*, NHK Special, 2011)

③ Traditional crops traditionally grown in the Site

Since arable land is scarce, the amount of production is low, but unique traditional crops have been passed on over time that are suited to the tough climate which differs from the lowlands. Cultivated crops include Gokasho corn, known as *yaune* or *yatsuriwase* in the Site, *Sobosan* beans, and *asajiri* beans. Gokasho corn in particular is hung from the eaves of many farm households, making it part of the local scenery.

Photo 11: Gokasho corn

④ Traditional *kamairicha* green tea

Tea plants (Camellia japonica), have long grown wild in the Site's mountains and fields. Known as "bush tea" or "mountain tea," the leaves are processed to make traditional *kamairicha* tea with iron pans, which is used for domestic consumption, rehydrating during work breaks, and so forth. Currently, some 97% of non-fermented tea (*ryokucha*) produced in Japan is made by means of steaming the tea leaves, so *kamairicha* is rare. What's more, while the Yabukita variety accounts for 97% of this tea, in this area the Takachiho and Yamanami cultivars are grown for *kamairicha* tea. It is Japan's number-one *kamairicha* tea-producing area, with an estimated annual production volume of 200 tons (*22), and the tea is of extremely high quality, having received a regional prize six times at the Japan National Tea Fair.

Photo 12: Roasting *kamairicha* by hand

(2) Biodiversity

As indicated below, rare animals and plants make their habitat in areas related to the sustainable composite system of agriculture and forestry developed in the Site.

① Forest biodiversity supported by sustainable forestry practices

The majority of the Site's planted forest is conifers such as Japanese cedar and *Hinoki* cypress, and thanks to most of them being appropriately managed through the implementation of weeding, thinning, cleaning cutting, etc., at optimal intervals, local biodiversity is being conserved. In particular, some ten rare species of plants listed in Miyazaki Prefecture's Red Data Book, including the Japanese Cypripedium and Calanthe Sieboldii, are found in the cedar forests of Toriyadake in Takachiho Town, even though they are planted forests, and these have been designated as important habitats in the prefecture. The Site therefore provides a valuable example of balancing forestry production with biodiversity conservation.

Photo 13: Cedar forest with wild Japanese

Moreover, the Site's sustainable forest management performs an important role in supplying clean water to rivers, and part

of the Gokase River that runs through the Site and Mimi River basin are inhabited by rare *kawanori* (Prasiola japonica; a vulnerable species on the Ministry of the Environment's Red List), which cannot be propagated except by running water produced by limestone.

Photo 14: Japanese Cypripedium

② Biodiversity supported by rice terrace agriculture

While the Site's rice terraces and the mountainside irrigation canals that support them are secondary natural features produced by human labor, they are inhabited by many rare animals and plants suited to this environment, especially amphibians, fish, and aquatic insects, so one may say that rice terrace agriculture is supporting biodiversity. The Site's rice terraces and mountainside irrigation canals are the habitat for animals and plants designated as endangered species in Miyazaki Prefecture, including loaches, *Lethocerus deyrollei* water bugs, Japanese predacious diving beetles, and dark-spotted frogs; in addition, river basins connected to the rice terraces are inhabited by precious amphibian species such as amber salamanders.

③ Rare grassland flora and fauna supported by agriculture (livestock raising)

The Gokasho Highland in the northwest of the Site is a highland area with an average elevation of 800 meters extending to the west of Sobosan. It consists of upland fields for cultivating cold upland vegetables, grassland, and forest. The 4.7 hectares of fields maintained here by cutting and controlled burning for the purpose of roughage production are inhabited by many rare plants. Rare animals and plants include the star lily (a vulnerable species on the Ministry of the Environment's Red List for which the Gokasho Highland is the southernmost habitat in Japan), Veronicastrum japonicum, scarce large blue butterfly, and *himeshiro* butterfly, as well as the *Aso takarakou (Ligularia fischeri var. takeyuki),* a plant found nowhere in the world except for the Aso site and this highland.

Photo 15: Star lilies

(3) Ecosystem functions supported by the Site's sustainable agriculture and forestry

The Site implements forest management practices that are suitable from an environmental conservation perspective, such as in the Morotsuka Village area, which received FSC-C012945 forest certification from the FSC®, and through recharging water sources and the like, it contributes greatly to enabling people to benefit from the forest, including its role in maintaining and conserving the ecosystem. Moreover, rice terraces serve to store water when it rains, thereby playing an important role in conserving the ecosystem in this Site with many steep slopes, while the irrigation canals that weave their way along the surface of the mountains catch rainwater that flows down the slopes, thereby playing an important role in preventing hillside collapses. In this way, the Site's composite system of agriculture and forestry contributes significantly to the stability of the ecosystem and the stable life of residents in the basin.

3. Knowledge Systems and Adapted Technologies

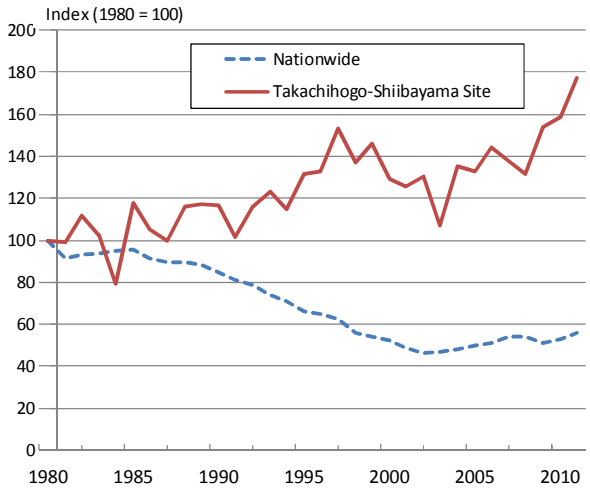
The Site's knowledge system is symbolized by its distinctive mosaic forest landscape resulting from composite management of timber production and shiitake mushroom cultivation activities and by its sustainable, traditional Japanese shifting cultivation that provides a model for other countries.

(1) Formation of mosaic forest via joint agriculture and forestry management in Morotsuka Village

Since old times, the Site's forests have been used to obtain food and timber through shifting cultivation, and due to the people's reverence for nature and spirit of harmony, they have practiced sustainable forest management that forbids excess burning or deforestation. Furthermore, shiitake mushroom cultivation has traditionally prospered here: the oldest record of this form of agriculture is cultivated shiitake mushrooms paid by the Takachiho area to the Arima Domain between 1614 and 1692 (*23), with Morotsuka Village said to be the birthplace of the practice. Until the 1980s, shiitake mushrooms were an especially valuable cash crop for the Site's farm-and-forestry households, as it was highly regarded as an export commodity.

Even amid social conditions that have changed significantly due to the global energy revolution, rapid growth in housing demand in urban areas, etc., and the promotion of mass conifer forestation across Japan, this Site, given its underlying tradition of using the forest while taking care to maintain it, still continues to practice sustainable forest management today. Thanks to its abundant forest resources that have reached optimal harvesting age, forestry activities continue to thrive even as timber production dwindles across Japan, with unsawn timber production[7] reaching the level of approximately 230,000 m^3 per year.

This is because many forestry households carry out composite management of agriculture and forestry activities that combine developing conifer forests as a long-term asset with farming of crops that generate revenues each year (shiitake mushroom cultivation, rice growing on terraces, tea production, livestock raising, etc.), which increases the stability of their operations.



Graph: Changes in Timber production over time in Morotsuka Village and Japan (Baseline Year = 1970)

Notably, the Site's "mosaic forest," in which three types of forest—conifer forest for timber production such as Japanese cedar and *Hinoki* cypress; deciduous broadleaf forest for shiitake mushroom cultivation such as Sawtooth oak; and conserved evergreen broadleaf forest—are laid out in a patchwork pattern, as seen in Morotsuka Village in the eastern part of the Site, has been formed by balanced forest conservation and management thanks to composite management agriculture and forest operations, resulting in a distinctive landscape.

The reasons why this mosaic forest was developed are that the forest is subdivided, with the majority of the forest in Morotsuka Village being operated by medium-scale independent forest households with less than 50 hectares, and that, in each privately owned forest, the household manages the forest in a well-balanced manner, with the right trees in the right places, including conifers such as Japanese cedar and *Hinoki* cypress for timber production over long-term intervals, deciduous broadleaf forest such as Sawtooth oak for shiitake mushroom production, and evergreen broadleaf forest conserved as natural forest. Roughly six-tenths of the vegetation in the entire village area is conifer trees such as Japanese cedar, while

[7] The amount of trees felled and transported as logs.

two-tenths is deciduous broadleaf forest such as Sawtooth oak used as raw wood for shiitake mushroom production and the rest is evergreen broadleaf forest (*24).

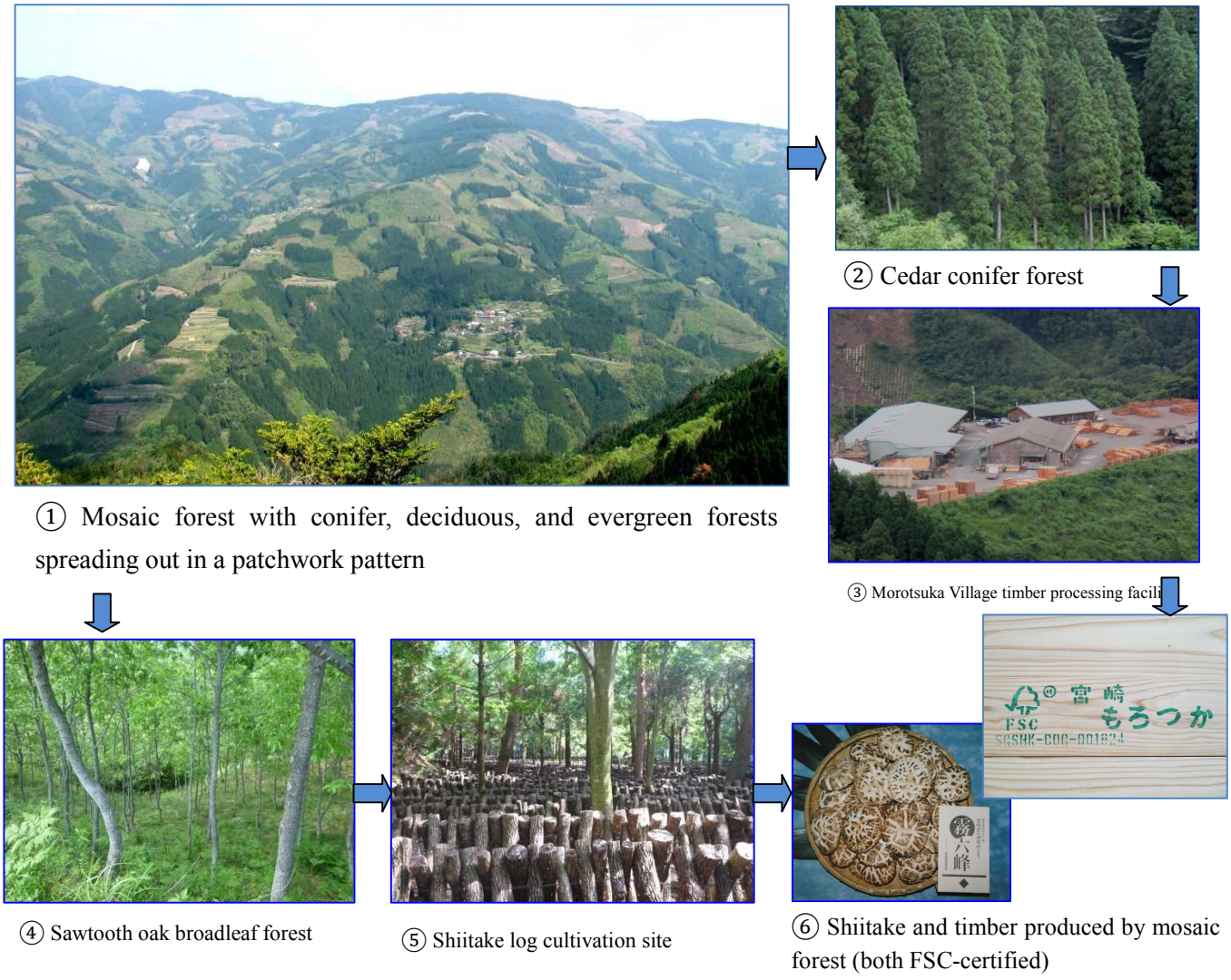


Figure 6: Composite System of Agriculture and Forestry Developed in Morotsuka Village's Mosaic Forest

From an ecosystem perspective as well, the mosaic forest serves to conserve biodiversity via deciduous broadleaf forests such as Sawtooth oak and evergreen broadleaf forests. The mosaic forest is a habitat for many different wild animals, with acorns from Sawtooth oak being an important food source for the creatures that live there. Moreover, deciduous broadleaf forests form a layer of mulch that plays an important role in recharging water resources.

In this Site of steep mountains where the conditions are unfavorable, forestry infrastructure has been actively developed by the public and private sectors, such as the building of forest roads and nurturing of forestry co-operatives, helping to form the Site's composite system of agriculture and forestry which balances thriving forestry production with forest conservation. The initiatives undertaken by Morotsuka Village are particularly noteworthy, including: 1) the formulation of a policy to prevent transfer of land outside the village in 1960 which, through the united efforts of all the villagers, stopped the transfer of forest to external landowners, which could lead to devastation of the forest due to clear-cutting and the like, 2) the establishment of a shiitake raw wood banking system to enable smooth supply-and-demand adjustment between shiitake raw wood producers and consumers, and 3) the establishment of the Community Hall Committee, an autonomous organization for all village

residents independent of the government (explained in detail in Section I-4-4, "Social System"), which has conducted educational activities in order to train people and, in partnership with the government, developed a road network that was indispensable to improving productivity, as a result of which the forest road density is now the highest in Japan, at 62 m/ha.

Moreover, the entire Morotsuka Village area received Japan's first FSC-C012945 forest certification from the FSC, and it also a global pioneer when it comes to the cultivation of shiitake mushrooms using raw wood such as Sawtooth oak and Japanese oak produced by its managed forests—for example, it received the world's first-ever FSC-C001800 CoC (Chain of Custody) certificate from the FSC for its processing and distribution operations. In addition, since 1997, Morotsuka Village, in collaboration with the Mimi River Area Forest Co-operative and others, has not only achieved stable operations through direct marketing but also run the Morotsuka Village Direct Shipment Housing initiative, whose purposes include facilitating commerce between producers and consumers; as of the end of 2013, it had supplied materials for 315 houses and was actively interacting with urban consumers (i.e., parties interested in timber for housing).


Photo 16: Photo of Morotsuka Village Direct Shipment Housing

As the above shows, the Site's composite system of agriculture and forestry, symbolized by the mosaic forest of Morotsuka Village, is a superior system in terms of knowing how to manage operations by supplementing forestry activities that have a long-term production cycle and conserving biodiversity by finding a balance between the forest and agricultural forestry while maintaining deciduous and evergreen broadleaf forests. Furthermore, the various related initiatives, especially those in Morotsuka Village, may serve as a model for the development of mountain villages in other countries.

(2) Traditional shifting cultivation in Shiiba Village

Photo 17: Local elementary school students practice shifting cultivation

In the Omukai district of Shiiba Village, thanks to a group centered on one farm household (the Burnt Field Buckwheat Club), traditional shifting cultivation is being continued in a forest of around 50 hectares owned by that household. It provides a valuable example as the only place in Japan upholding this practice. Moreover, it is taking care to pass on the tradition in the Site (e.g., hands-on teaching of shifting cultivation to local elementary school students).

This traditional shifting cultivation is a cyclical farming practice that involves clearing relatively small forest plots of around 0.5 to 1 hectares, creating arable land by burning away the undergrowth (by setting fire to it), cultivating buckwheat, Japanese millet, adzuki beans, soybeans, etc., for about four years, then restoring the forest by always allowing a long fallow period of around 20 to 30 years and, once the plot's fertility has returned, starting the shifting cultivation cycle again. Compared to shifting cultivation carried out in other mountain areas in south-east Asia, this is practice is distinguished by the fact that it is sustainable and environmentally friendly due to the implementation of a four-year crop rotation system and by the long fallow period that is always provided after burning a small area.

Figure 7: Cycle of shifting cultivation

(Source for photos 3-6: *Grandma Kuniko and the Mysterious Forest*, NHK Special, 2011)

In the Site's dialect, the clearing of trees in preparation for burning a field is called *yabokiri*, and burning off the field after *yabokiri* is called *yaboyaki*. In general, the clearing of trees in preparation for burning a field is conducted in the autumn of the year before it will be set on fire. The prepared site is a specified square area of around 0.5 to 1 hectares, typically on a sunny, south-facing slope. In the first year, immediately after burning, buckwheat is cultivated by sowing seeds on the ashes. Then, Japanese millet is cultivated in the second year, adzuki beans in the third year, and soybeans in the fourth year (*25). From the second year onward, weeds and scrub re-grow and flourish, but the traditional species adzuki beans and soybeans that have been passed on in this Site can be cultivated even in this kind of environment.

The order of cultivation over the four years enables a good balance by first cultivating buckwheat and Japanese millet, which are crops that require nutrients in the soil, then cultivating adzuki beans and soybeans, which are nitrogen-fixing crops. Buckwheat, Japanese millet, adzuki beans, and soybeans, combined over four years, are the primary crops grown in burnt fields, but others are cultivated as well, such as turnip and foxtail millet. Despite the fact that fertilizers and agrochemicals are not used in burnt fields, in the case of Japanese millet, which is a key grain, unhulled yields of 198 kg (*26) per 0.1 hectares (or 1,000m^2) have been recorded. Since shifting cultivation guarantees a certain yield, it is a logical farming practice for this

mountain environment.

Once crop cultivation is finished, a period of forest recovery begins based on the stumps of Sawtooth oak and the like that remain in the burnt field's arable land sprouting and growing (bud renewal), or, in some cases, trees being planted. This forest recovery period continues for around 20 to 30 years, or even as much as 50 years. After that, the forest is again cleared to create burnt fields, with the felled trees being used as construction materials, fuel, or raw wood for shiitake mushroom cultivation. The forest stage of the shifting cultivation cycle serves multiple purposes, including not only regenerating nutrients in the soil but also supplying products such as timber and mountain vegetables, recharging water sources, etc.

Shifting cultivation is a farming method that is dependent on the forest. If the forest were destroyed, there would be no hope of continuing this practice. A key feature of shifting cultivation is therefore the implementation of the fallow period during which forest is regenerated. The forest builds up mulch with the passage of time, restoring the conditions that make the next shifting cultivation cycle possible. As well, once a field has been burned, the family that owns it only takes the grains needed for their day-to-day life, so, assuming a family of six people, since the burnt field will be at most 0.6 hectares and be managed in patches, there will be no serious ecological impact on the animals and plants (*27). At present, the forest owned by the shifting cultivation farming household in the Omukai district manages burnt fields in patches, thereby maintaining the forest's abundance.

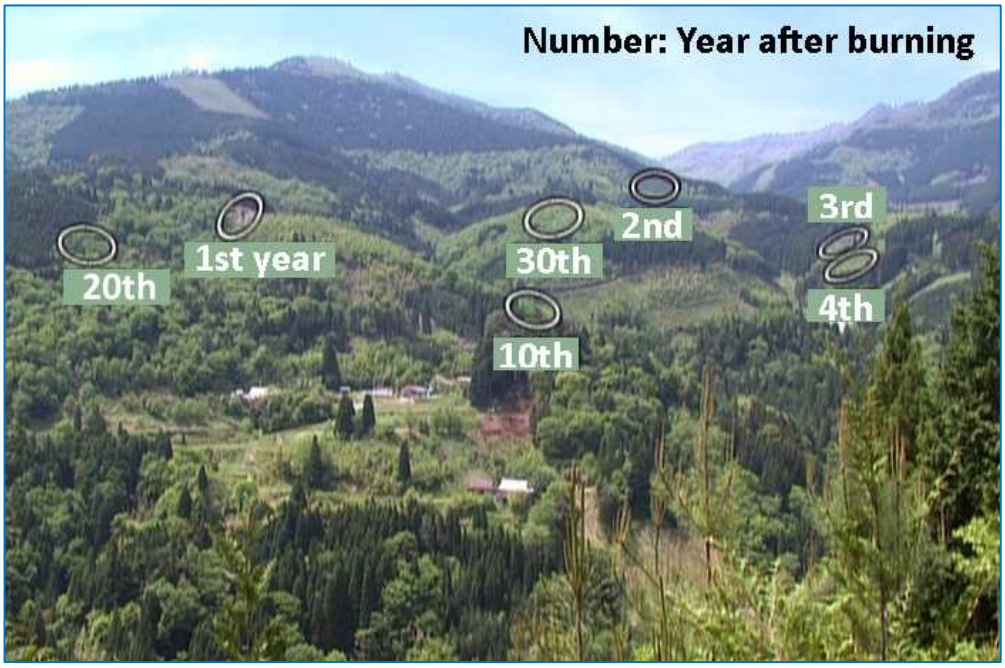


Photo 18: Distribution of shifting cultivation sites in Omukai District, Shiiba Village

(Source for photos 3-6: *Grandma Kuniko and the Mysterious Forest*, NHK Special, 2011)

The shifting cultivation has been handed down in Shiiba Village as its own unique traditional culture. Prior to the burning, a *gohei* (decorative wand used in Shinto rites) is placed on a stump near the upper left corner of the land to be burned, a prayer is spoken saying that the land is to be burned, asking snakes, frogs, and insects to vacate the land immediately, and imploring the god of the mountain, the god of fire, and the bodhisattva Jizo to protect the land so that the fire does not spread or burn everything away, and then sacred sake is poured. This

Photo 19: Prayer before *yaboyaki* burning

shows the mentality of the people, who appreciate nature and value harmony with it.

In addition, shifting cultivation has given rise to distinctive dishes rooted in the local climate, such as *wakudo* soup that uses the buckwheat grown in burnt fields and *nadofu*-style tofu using soybeans, mountain vegetables, etc.

The farming household at the center of carrying on the shifting cultivation tradition also runs a farm guest house where it shares this culture with people, such as the previously mentioned dishes. The Site is therefore working hard to undertake initiatives that will not just pass on the shifting cultivation tradition but also leverage it to create new occupations.

Photo 20: *Wakudo* soup

N.B.: *Wakudo* means frog, and the soup is so called because the lump of buckwheat sticking out of the soup resembles a frog

Photo 21: *Nadofu*-style tofu

4. Culture, Values, and Social Organizations (Agri-Culture)

As a site related to Japanese mythology found in ancient chronicles like the *Kojiki* and *Nihon Shoki*, the Site has many landmarks associated with myths and folklore, along with shrines and small Buddha figures throughout the hills and fields. Kunio Yanagita, the father of Japanese folkloristics, visited Shiiba Village and in 1909 wrote what is considered the first published work in the field, *Nochi no kari kotoba no ki* ("Notes on Traditional Hunting Lore"), which mostly deals with the folk customs of Shiiba Village. The Site is therefore said to be the birthplace of Japanese folkloristics, and its valuable customs are still an active part of daily life today. In the introduction, Yanagita wrote: "When you are in the mountains [in Shiiba Village, etc.], how remote the modern world feels. To illustrate this using the course of our nation's history as an example, I believe that the country has not progressed uniformly toward the modern day. It is the nature of Japan that history moves forward into new eras in the lowlands first, and then invades the mountains." Even today, diverse folk customs that may be considered essentially Japanese and the traditional agriculture and forestry culture remain alive in daily life.

Furthermore, the social system is a product of a spirit of mutual co-operation and a community hall system born from that spirit that have been developed in order to survive in the tough environment.

(1) The Shishikake Festival, an ancient agricultural ritual

According to old records dating from 1691, 243 shrines and 193 wooden Buddha statues were venerated within Takachihogo at that time, which gives a sense of the devotion people in mountain villages felt toward gods and Buddhas amid their tough agricultural life.

Photo 22: *Sasafuri kagura* during Shishikake Festival

Along with agriculture and forestry, this faith remains a living part of the daily culture, including an ancient agricultural ritual called the Shishikake Festival, which has been carried on over the years by Takachiho Shrine. This festival is a memorial service for the repose of the frost god Kihachi, associated with the mythology that he was driven away by the enshrined deity of Takachiho Shrine, the rice god Mikeiri no Mikoto. Every year, on December 3 of the lunar calendar, a boar is offered to the gods and the *chigi no mai* dance (also known as *sasafuri kagura*) is performed. *Sasafuri kagura* is an ancient purification dance in which seven dancers, including the head priest, shake bamboo shoots while reciting a song to keep Kihachi asleep, the "Kihachi Nemurase Uta." This simple, austere mountain belief to ward off agricultural disaster brought about by early frost is said to be one of the origins of the Site's *kagura*.

(2) Beef cattle-raising and grass-cutting songs

A traditional feature of autumn in this Site was the harvesting, drying, and cutting of wild grass on mountain slopes for winter roughage for livestock and re-thatching roofs, known as *kariboshikiri*, and the accompanying work song "Kariboshikiri Uta" ("Grass-cutting Song")—a tradition carried on mainly in Takachiho Town.

While the re-thatching of thatched roofs has died out, *kariboshikiri* is still continued by some farm households, and from mid-September though mid-October, they cut away the tall, dense thickets of cogon grass and susuki grass growing on the gentle slopes at the foot of the mountains with scythes, and then leave them to dry in the sun. This is the work that comprises *kariboshikiri*. The cut grass is either piled up on the spot in small stacks known as *tobi*, which are then carried away as needed, or stored in barns for use as feedstuff for livestock during the long winter months. Since the grasslands of the Takachiho area grow long and are rich in nutrients, including a mix of pulses such as arrowroot and clover and plants from the aster family, the cleared fields and the climate have helped livestock raising to thrive. Today, wild grasses continue to be used as roughage for Japanese cattle, and the practice of *kariboshikiri* conserves the landscape by maintaining scenic village forests and rice terrace slopes.

Photo 23: Grass-cutting

Photo 24: Stack of cut grass

"Grass-Cutting Song" lyrics:

We're done cutting grass on the mountain, oh!

We harvest rice in the paddy tomorrow, oh!

Soon the sun will be setting, oh!

Bring the grass home on the horses, oh!

It is not known when *kariboshikiri* began, but the diary of a village headman from the Edo Period (1603 – 1868) records that someone carrying out this task was injured when mistaken for a boar and shot, and it is also mentioned in old records from 1755. Men engaged in *kariboshikiri* would sing the "Grass-cutting Song" to accompany their labor or as a kind of singing competition to see who had the best voice. Reflecting on the old days, the late Akira Sato, who was said to be a master singer, said: "On the mountain, voices would be raised in song with the dawn and continue all day long without a break in this valley and that." Of course, the song was also sung to indicate one's whereabouts to family members, as well as the ritual gatherings known as *utagaki*.[8] The simple, earthy, hearty verses and the bright, powerful singing are products of the local way of life (*28). This song has been passed on by singers in each village from the Meiji Period (1868 – 1912) to

[8] A custom in which young men and women gather at a specified time and sing courting songs to each other.

the present day, and since 1983, a National Grass-Cutting Song Convention has been held each year.

(3) Shifting cultivation and "Hietsuki Bushi"

In Shiiba Village, "Hietsuki Bushi" ("The Millet-Pounding Tune") song sung when husking the millet produced by burnt fields has been passed down over time. It is known as one of Japan's representative folk songs, and a national "Hietsuki Bushi" singing tournament is held each year. It is a bright, sinuous melody based on a scale known as the "Shiiba style," with lyrics that are full of variety. In the village, millet was pounded on the floors and in the gardens of farm households from late autumn through early winter, and these homes would bustle with activity as people from neighboring villages stopped by to watch. Talented singers from the village would sing loudly in time with their pounding hands to help relieve their fatigue, creating a lively atmosphere. The song features distinctive pauses to breathe, which occur naturally after singing a long phrase in one breath, and it has a strong connection to the everyday activities of the people, such as coming and going along mountain roads, working on the steep mountain slopes, etc. (*29).

Photo 25: Pounding millet in front of Tsurutomi Yashiki in Shiiba Village (Source: Songs and Performing Arts of Miyazaki 101, Miyazaki Prefecture)

"The Millet-Pounding Tune" lyrics:

Put the bell on the sansho tree in the garden
Come along when you hear the bell ring
When the bell rings, what should I say?
When the bell rings, say you're giving water to the horse
I pound and pound but I can't husk the millet
Was it at the bottom of the pile in someone's storehouse?

(4) Community hall system (social system)

The Site's tough agriculture and forestry lifestyle has fostered a spirit of independence and mutual co-operation among residents. Notably, the self-governing structure that existed in each village since old times has developed into an autonomous community hall system (independent residents' organization) in the modern era, which has played an essential role in regional development, including the agriculture and forestry.

Notably, in Morotsuka Village, there is a community organization for all village residents known as the Morotsuka Village Community Hall System. A Community Hall Committee independent of government organizations integrates the entire village and acts as a liaison between different groups such as the village, agricultural co-operative, forest co-operative and residents, as well as performing a major role in improving agriculture and forestry production activities and residents' daily lives through independently carrying out education, industrial development, and activities to improve the living environment.

A key achievement realized by this community hall system was the formulation in 1957 of an industrial promotion measure revolving around joint operations based on four products (timber, shiitake mushrooms, livestock, tea) that are mutually complementary both from an economic and labor intensiveness perspective, driven by a Village Industry Promotion Committee made up of representatives from the Community Hall Industrial Department, the village, agricultural co-operative, forestry co-operative, etc. Even today, the operational stability of farm-and-forest households is enabled by commitment to the joint operation approach promoted by this policy (*30). In addition, various community halls formulated a district road network plan, and as a result of all communities pushing forward with road development, the road density within the village

is 62 meters per ha—the highest in Japan. This has enabled more efficient shiitake mushroom and timber production and greatly reduced costs, as well as securing the profitability of the thinning timber production business.

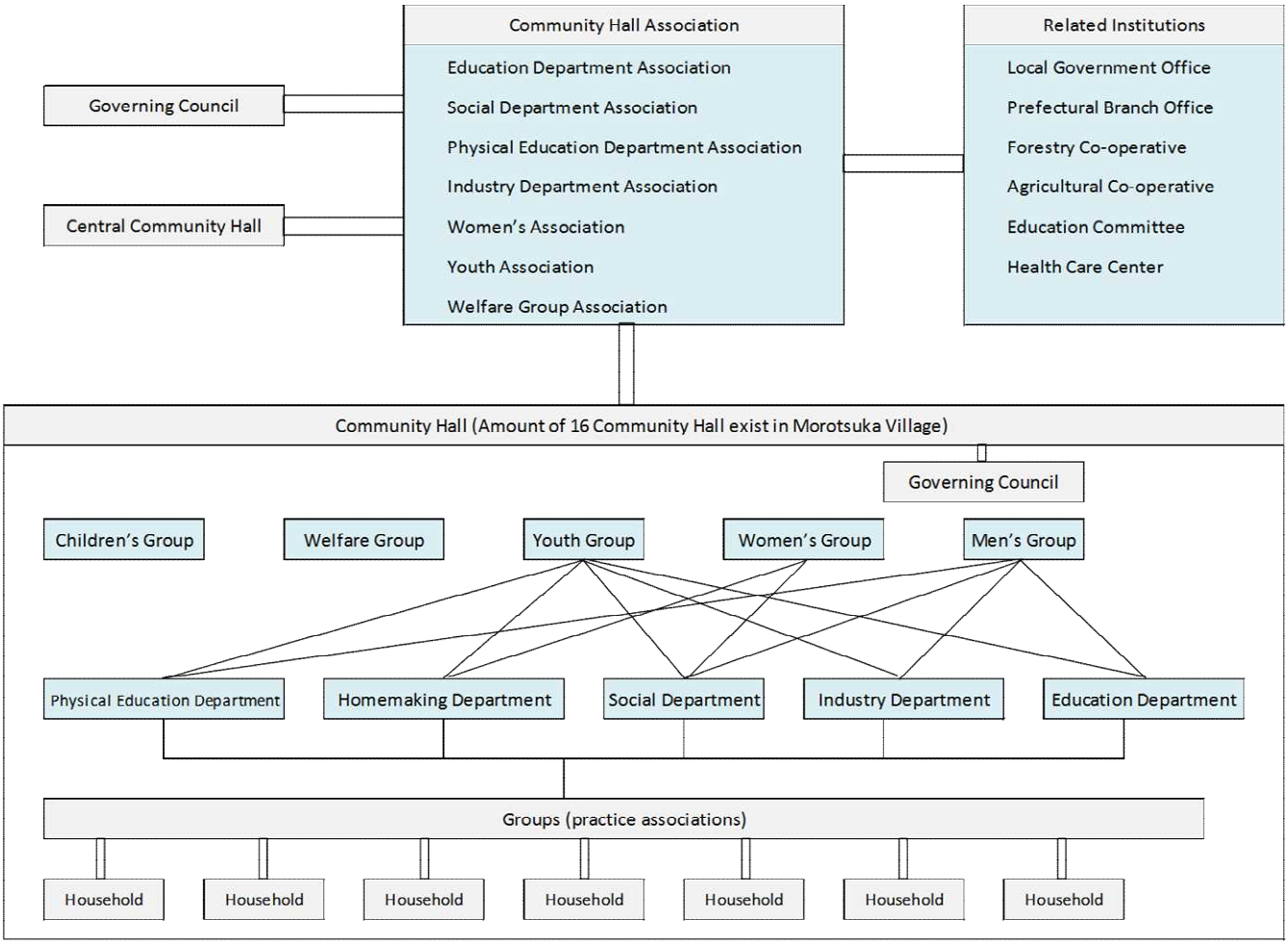


Figure 8: Structure of community hall system

5. Remarkable Landscapes, Land and Water Resources Management

Together, the forests nurtured by the sustainable composite system of agriculture and forestry developed in the Site, the mountain streams arising from them, and the scattered villages and rice terraces form a remarkable landscape. Moreover, the rice terraces and the vast mountainside irrigation canal network that supports them, which were built through enormous effort by farm households, are a major distinguishing feature when it comes to land and water resources management.

(1) The remarkable landscape nurtured by the sustainable composite system of agriculture and forestry

Since the Site is mountainous and most of the land slopes steeply, the majority of its paddies are rice terraces. Notably, in the north of the Site, a cluster of rice terraces spreads out from the top of the Gokase River's gorge. Thanks in part to the fact that the grass is cut every day to obtain roughage for livestock, the slopes of these rice terraces form a scenic landscape. Furthermore, in the Mimi River basin in the south of the Site, especially in the vicinity of Morotsuka Village, conifer forests such as Japanese cedar and *Hinoki* cypress, deciduous broadleaf forests such as Sawtooth oak, and evergreen deciduous forests spread out in a mosaic, forming a unique and beautiful landscape.

Photo 26: View of rice terraces in the Site (Takachiho Town)

(2) Distinctive land and water resources management features: Securing water for agriculture via rice terraces and mountainside irrigation canal network

Many of the Site's rice terraces were created in modern times, following the start of the Meiji Period (1868-1912). While some rice terraces had previously been established on land naturally blessed with spring water or surface water, their total area was small. This was because it was difficult to use the water of the Site's two rivers, the Gokase River and Mimi River, since they run through deep gorges.

However, in order to grow paddy rice, which tastes better and provides higher, more stable yields, the people of the Site undertook diligent efforts, such as Ishigaki-no-mura in Hinokage Town's Togawa district, which constructed rice terraces with 11 m-high stone walls (*31), the highest in Japan, with the oldest being built from 1848 to 1859.

There are many records of pioneers from the Site who spared no effort to develop rice paddies and open up irrigation canals to feed them from the early modern period through the modern period, and the stone monuments honoring the progress of various irrigation canal projects and the visionaries behind them stand as testaments to the importance of "wet rice" cultivation.[9] As well, more than 300 water gods were worshipped, and the devotion of the Site's past generations lives on today.

For example, for the irrigation canal at Sangasho in Gokase Town started in 1925, progressive local farmers invested their own funds and worked on the difficult construction themselves, and many other farm households also took part in the work. When the project was completed and the water flowed in, the story is told that an old farming couple scooped up some of the muddy water and offered it to the gods in their household shrine, showing how important the water was.

From the Meiji Period (1868-1912) onward, the Site has pushed forward with the establishment of rice terraces and mountainside irrigation canals for irrigation constructed to follow the contours of the land along the mountainsides, centering on Takachiho Town, Hinokage Town, and Gokase Town. Today, there is a mountainside irrigation canal network exceeding 500 kilometers in total length and more than 1,800 hectares of rice terraces, which testifies to the enormous effort made by past generations.

In particular, the three irrigation canals indicated below are renowned for their length. These supply water to rice terraces from sources deep in the mountains via irrigation canals laid skillfully across the mountainsides by following the contours of land for dozens of kilometers, with tunnels drilled through the mountains in some parts. The construction of this extensive mountainside irrigation canals network and the ingenuity deployed in order to ensure stable irrigation for a relatively small group of rice terraces are emblematic of the people's hard work.

Table 4: Three Leading Irrigation Canals in the Site

Irrigation Canal Name	Total Length (km)	Area Served (ha)	Construction period
Takachiho Irrigation Canal	69.2	94	1887 - 1919
Nanaore Irrigation Canal	81.0	101	1920 - 1929
Sangasho Irrigation Canal	62.5	55	1925 - 1927

Photo 27: Ishigaki-no-mura rice terraces use 11 meter-high stone walls

Photo 28: Surveying during mountainside irrigation canal construction

Photo 29: Construction work on a mountainside irrigation canal in the Site
(Source: Midori Digital Archives)

Photo 30: Woman carrying materials
(Source: Midori Digital Archives)

[9] Rice grown in paddies. Some of the rice cultivated in the Site is upland rice, so this name is used to distinguish them.

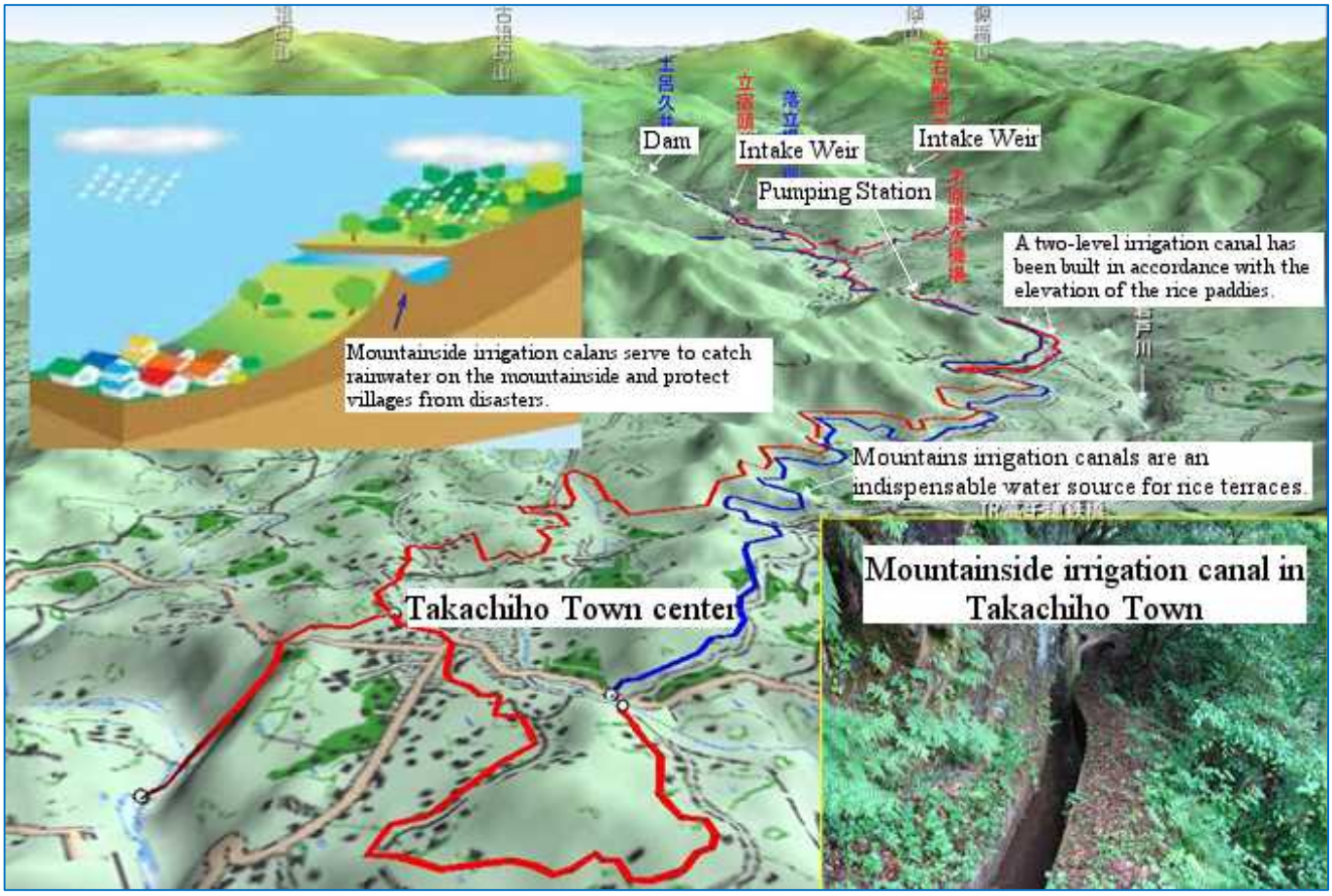


Figure 9: Map of Takachiho Irrigation Canal built along the mountainsides

In addition, rice terraces serve to store water and mountainside irrigation canals play an important role in preventing hillside collapses by catching rainwater that flows down the slopes, so rice terrace agriculture plays a part in disaster prevention.

From the perspective of recycling resources, since the grass of rice terrace slopes and ridges is cut to obtain roughage, as well as maintaining performance, there is a strong connection between rice terrace agriculture and beef cattle raising. The returning of livestock excrement to rice terraces and fields as compost is also an indispensable part of the development of sustainable agriculture.

II. Other Social and Cultural Characteristics Pertinent to the Management of the Agricultural System

Ritual *Kagura* Dancing

(1) The Site's *kagura* tradition and its history

In Japanese mythology chronicled in the *Kojiki* and *Nihon Shoki*, the Takachiho area is said to be the place where Ninigi-no-Mikoto, grandchild of Amaterasu-omikami, universal god of the entire Japanese nation, descended from heaven to found Japan. It is therefore steeped in myths and legends, such as the story that Amanoiwato Shrine in this area was the scene of the "hiding in Iwato," a key episode in Japanese mythology. And one of the Site's major shared cultural traditions is the performance of ritual *kagura* dancing to request a bountiful harvest of five staple grains, which is linked to the Japanese mythology that live on in this Site.

Kagura is a kind of musical performance comprising various elements in which the dancers ask the gods and Buddhas to descend and grant a bountiful harvest and so forth. It is performed at shrines and elsewhere in all areas of Japan. The *kagura* in this Site possesses remarkable distinguishing features, with rites and performances that are profoundly connected to Japanese mythology and the mountain way of life (hunting, agriculture and forestry, etc.). As the largest communal religious rite in the villages, a wide variety of *kagura* with a long tradition have been maintained in different communities, such as Takachiho's *yokagura* (a national important intangible folk cultural property), Morotsuka *kagura* (a prefectural Intangible Folk Cultural Asset), Shiiba *kagura* (a national Significant Intangible Folk Cultural Asset), etc.

With regard to its history, the records of Takachiho Shrine describe "seven days and seven nights of *kagura*" taking place in 1189, which is thought to be the oldest record referring to *kagura* in Miyazaki Prefecture. Furthermore, Takachiho's *yokagura* is known as a dance associated with the Iwato myth of Amaterasu-omikami, but its origins are as a festival centering on a mountain god. Rooted in the local system of production, involving shifting cultivation, hunting, grains, and water, it started as a rite performed in praying for a bountiful harvest of five staple grains. Based on surviving Kojin masks from the Muromachi Period (1336 – 1573) and documents from the Kamakura Period (1185 – 1333), the roots of the performances are said to date back to over 800 years ago, and it

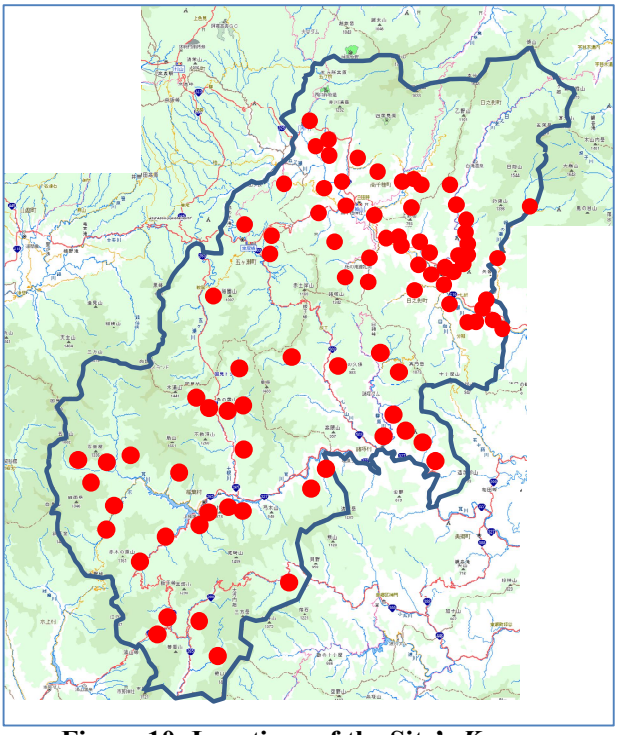


Figure 10: Locations of the Site's *Kagura* Performances in 2013 (87 in Total)

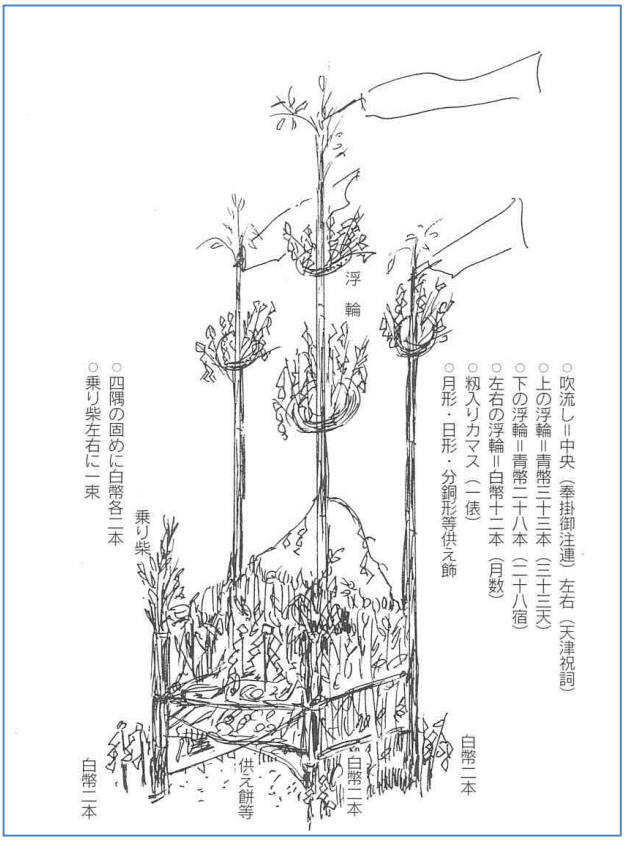


Figure 11: *Sotojime*

(Source: Yasuaki Yamaguchi, *Miyazaki's Kagura,* 2000)

is believed that its current form was established in the late Edo Period (1603 – 1868).

Within an area of only 27,000 or so people, *kagura* was performed at some 87 locations in 2013. This testifies to how *kagura*, with its long history, has been carefully passed on down the years as a venue for bringing the Site's communities together to pray for stability in their daily lives, in order to help the local people survive in the tough mountain climate.

Photo 31: Five grains dance (Takachiho yokagura)

The *kagura* stage, music, and so forth also strongly reflect the character of the Site. For example, the *sotojime* decoration (also known as the *yama*) placed as an object to summon the gods has a sack of unhulled rice called a *kamasu* placed in the middle to represent the mountain's god. This recognizes that the mountains and the forests that cover them supply food for people and provide them with a basis for living and shows that they are deified. In addition, the 33 performances of Takachiho *yokagura* comprise various dances, such as the dance to invite the gods, the dance of the five grains, the farming dance, the Iwato dance, the dance of cordoning off, etc. Since grains such as Japanese millet, foxtail millet, and common millet are used as the *torimono*[10] in the dance of the five grains, every village grows some of these grains, even if only in small quantities.

Photo 32: *Ita-okoshi* ceremony (Shiiba *kagura*)

Hunting culture also has a strong influence. It is said that the 14th Takachiho *kagura* dance (*Yamamori*) and the *Ita-okoshi* ceremony[11] conducted in Shiiba *kagura* are derived from rituals that were performed when going to hunt animals such as deer and boars that were harmful to the burnt fields that provided staple foods, testifying to the fact that hunting was a familiar part of life in the Site.

The various *gohei* (decorative wands used in Shinto rites) frequently used as *torimono* for *kagura* are tools for summoning deities or exorcising demons that represent the power of the gods. Accordingly, when *kagura* is finished, it is common for people to carefully bring these *gohei* to a dry field or the inlet of a paddy field and plant them in the ground for protection.

Photo 33: Farmers praying for a good harvest with *gohei* in the ground

As Kunio Yanagita, father of Japanese folkloristics, wrote in the introduction to *Nochi no kari kotoba no ki* ("Notes on Traditional Hunting Lore"), the *kagura* of the Site—which is profoundly linked to Japanese mythology and features elements of both agricultural forestry culture (shifting cultivation farming, etc.) and hunting culture, reflecting daily life in the mountains—conveys the folk customs of old Japan, in which

[10] An item that dancers hold in their hand while performing *kagura*, etc.
[11] A ritual in which boar meat on a cutting board is carved up into seven slices, placed on bamboo skewers, and offered to the gods while reciting a prayer.

wet-rice farming culture played a central role, to the people of today, making it an extremely precious traditional culture.

(2) The Site's collaboration-based traditions

The Site's *kagura* dances are generally held on designated dates from November through February, with one house in the village specified as the venue (the *kagura-yado*). The *yokagura* form of *kagura* is common, in which dancing is performed through the night, from midnight to dawn. *Yokagura* typically begins with the god-welcoming rite of *kamimukae*. Starting in the afternoon, the rite is held at the village patron deity's shrine, then a *michiyuki* procession takes place to the *kagura-yado* and the god is danced inside. After this rite is completed at around 6 p.m., *kagura* is danced all night long. This is a special night for the local people, with the whole community taking part.

Photo 34: *Michiyuki* procession to *kagura-yado*

Kagura dancers are usually normal people who make their living from work such as agriculture and forestry, but they take pride in passing on the tradition and practice the dances enthusiastically. What's more, *kagura* is a tradition that takes place through the collaboration of many people. These days, women notably play a major role, handling the preparation of the food, including dinner for the dancers and refreshments served to guests. The people involved in setting up the venue create a sacred place to summon the deity in accordance with various traditions, such as the *sotojime* to which the deity descends, the space in which the *kagura* will be danced, a canopy and paper decorations, etc. And local people perform various roles in organizing the *kagura*, such as the director, people who assist the dancers, people who keep watch at night, etc.

Photo 35: *Kagura-yado* with *sotojime* in center

As the above shows, the Site's *kagura* is a cultural tradition that strongly reflects its distinctive agriculture and forestry. It is carefully maintained even now as a venue for prayer and collaboration between local people that is indispensable to supporting the local composite system of agriculture and forestry. Furthermore, cyclical management is undertaken to direct people toward further conservation of agriculture and forestry and the Site's resources. From a global perspective, it may be considered a valuable cultural characteristic relating to the management of the composite system of agriculture and forestry.

Photo 36: People preparing for *kagura*

Photo 37: Seniors and children in *michiyuki* procession

Photo 38: *Nishime* (local cuisine served during *kagura*, etc.)

Photo 39: People praying during *kagura*

Photo 40: *Kagura* dance and spectators (Shiiba Village *tsugao kagura*)

III. Historic Relevance

History of the Site's agriculture and forestry

Given that ruins exist dating from the Paleolithic Period (e.g., Dewa cave, Hinokage Town) over 20,000 years ago, it is believed that humans have made their home in this Site for tens of thousands of years.

Its ancient culture was formed through exchange with the mountain tribes of Oita to the north and the Kumamoto area to the west. Earthenware excavated from late Jomon Period (1,200 – 300 BC) ruins is associated with the mountain culture that spanned the upper reaches of the Shirakawa, Kurokawa, and Midorigawa Rivers in Kumamoto Prefecture, while engraved *kamegata* earthenware from the early Yayoi Period (300 BC – 250 AD) is part of the culture found in the upper and middle areas of the Ono River in Oita Prefecture. The Higo-style tunnel tombs that were widespread in this Site in the late Kofun Period (250 – 538) are also said to have a strong link to the Aso area. This process of cultural exchange between areas would subsequently continue in the areas of politics, religion, lifestyle, etc.

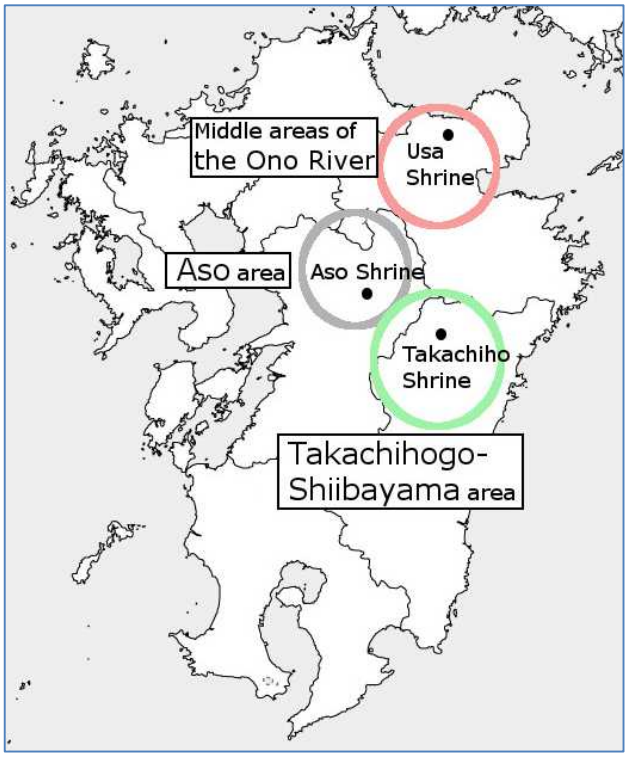


Figure 12: Map in and around Takachihogo-Shiibayama

Takachiho, which accounts for a large part of this Site, was an extensive area straddling both Hyuga Province and Higo Province, as shown by the inclusion of references to "Chiho Village, Aso Domain, Higo Province (Lower Takachiho)" and "Chiho Village, Usuki Domain, Hyuga Province (Upper Takachiho)" in the *Wamyo Ruijusho,* a Japanese dictionary compiled in the Heian Period (794 – 1185). It is thought that the part of Takachiho belonging to Higo was incorporated into Aso Domain with the establishment of the Nara Period (710 – 794) province-district system.

With regard to religion, it is written in the records of Usa Hachiman-gu, the *Aso Daigongen Konponki* ("Record of the Origins of Aso Daigongen"), etc., that the first son of Emperor Jimmu was Takachiho Myojin, the second son was Aso Daimyojin, and the third son was Usa Hachiman, which shows that three shrines in Takachiho, Aso, and Usa worked together to enhance the authority of the gods.

Photo 41: Takachiho Shrine

It was amid this historical context that the agriculture and forestry of the mountain-enclosed Takachihogo-Shiibayama Site was developed, through skillfully obtaining resources from the forest and efficiently using small rice fields and narrow upland fields established in mountain gorges.

Shifting cultivation, said to have been inherited from the extensive agriculture of the Jomon Period (1,200 – 300 BC), is a farming practice suited to this mountainous area, and until around 1945, it covered a significant area of land. For example, in

1845, herbalist Hika Kaku, who researched medicinal plants in this Site and others, wrote in the *Record of Collecting Herbs in Takachiho*: “There are hardly any rice paddies to be seen. For the most part, the landscape of the mountains consists of the vestiges of burnt fields alternating with forest [that has grown back after burning].” In addition, in the mid-Edo Period (1603 – 1868), the *General Account of Conditions in Shiiba Village, Usuki Domain, Hyuga Province* prepared by Hitoyoshi Domain records that in Shiiba Village at that time, there were 492 hectares of burnt fields compared to 0.2 hectares of rice paddies and 49 hectares of dry fields (*32). Moreover, in the former Sankasho district in Gokase Town, it was recorded that burnt fields accounted for 527 hectares, or more than half, of its 991 hectares of arable land (*33) in 1907.

It is believed that rice growing spread to this Site through exchange with other areas in the mid-Yayoi Period (300 BC – 250 AD), but as mentioned earlier, the total cultivated area was small due to the geographic conditions. It increased greatly starting in the Meiji Period (1868 – 1912) as the construction of mountainside irrigation canals and development of rice terraces progressed thanks to tremendous efforts undertaken by the people. At present, there are over 1,800 hectares of rice terraces and a network of mountainside irrigation canals feeding them exceeding 500 kilometers in total length.

The timber forestry industry developed following the afforestation policies of the 1950s, and it has made great advances based on the Site’s tradition of sustainable forestry management, with thriving unsawn timber production and pioneering initiatives such as those undertaken by Morotsuka Village. Furthermore, the Site is said to be the birthplace of shiitake mushroom cultivation, with the oldest record of this form of agriculture being shiitake mushrooms that were paid by the Takachiho Site to the Arima Domain between 1614 and 1692, and it remains one of Japan’s major producing areas today.

Presumably formed through experience over a long time based on the natural conditions, the Site’s composite system of agriculture and forestry remains central to the practice of farming and forestry in each town and village today. For example, the Morotsuka Village Industry Promotion Committee decided in 1957 to adopt an industrial promotion measure revolving around joint operations based on four products well-suited to the village (timber, shiitake mushrooms, livestock, and tea).

IV. Contemporary Relevance

(1) Conserving and managing forest resources

Forest conservation is an important issue worldwide; agriculture, forestry, and stock farming in particular are said to be major causes of deforestation. Through composite management of the Site's forests, based on operation of conifer forests such as cedar, with a long production cycle, combined with cultivation of shiitake mushrooms and the like that supplement this in the short term, forest resources are expertly maintained and conserved, providing a valuable model for countries where deforestation continues to worsen due to agriculture and forestry.

(2) Maintaining biodiversity and enabling a low-carbon society by addressing climate change through forest conservation

In this Site, soil is conserved through the conservation and management of the forests, and the woods are inhabited by and propagate rare animals and plants. Since the forests absorb and accumulate CO_2 in the atmosphere and carbon is fixed through long-term use of cultivated trees as construction materials and the like, they help to alleviate climate change and maintain biodiversity. Moreover, the mountainside irrigation canals and rice terraces constructed to wind through the forests function to offset abrupt meteorological changes by reducing the risk of flooding during heavy rains.

In addition, the idea of gratitude to and reverence for nature and sense of harmony with the environment that the local people have maintained since old times, based on the harsh mountain climate, remain alive today. The Site is helping to enable the development of a low-carbon society through initiatives such as the Gokase Town Basic Ordinance for the Realization of a Low-Carbon Community.

(3) Regional development aimed at upholding traditional culture and creating a Forestopia (Forest-Utopia)

As a site related to Japanese mythology found in ancient chronicles like the *Kojiki* and *Nihon Shoki*, the Site has many landmarks associated with mythology and legends, along with shrines and small Buddha figures throughout the hills and fields. Precious folk culture traditions linked to farming and forestry have been passed down over time, including old agricultural rituals like the Shishikake Festival, farming and forestry work songs like "Kariboshikiri Uta" and "Hietsuki Bushi," and ritual *kagura* dancing connect to Japanese mythology, which is performed as a prayer for a bountiful harvest of five staple grains. All of these are valuable cultural traditions and a precious shared heritage of the Japanese people that should be handed down to future generations.

Photo 42: Forestopia Learning Forest Miyazaki Prefectural Gokase Secondary

So that future generations may inherit the forest that is fundamental to local life and the traditional culture associated with it, since 1988 regional development has been pursued based on a shared vision of a Forestopia that revolves around conserving the forest and the traditional culture arising from it, creating new culture, and promoting interchange between cities and rural communities. With the aim of training people to carry out these tasks, measures have been undertaken such as the establishment in 1994 of Miyazaki Prefectural Gokase Secondary School, Japan's first-ever public secondary school integrating middle and high school (now known as Forestopia Learning Forest—Miyazaki Prefectural Gokase Secondary School). Notably, at this school, students gain hands-on experience with

nature (rice planting, etc.) and learn regionology, forest culture, math, science, and engineering, environmental science, etc., though "Forestopia Studies," a general course that takes place for three hours, twice a month, while in the sixth and final year, they present and submit a self-directed research paper called "Forestopia Research."

(4) Exchange between cities and rural communities and offering healing to urbanites through forest therapy[12]

Within this Site, various groups and individuals are engaged in exchange between cities and rural communities, such as the Gokamura Development Committee, the Yuhi no Sato Development and Promotion Committee, and the Burnt Field Buckwheat Club, which have formed the Takachihogo Tourism Association to work together as a single region. Tourism is being actively pursued: in 2013 alone, 74 farm households within the Site were active as farm guesthouses, accounting for over half of all farm guesthouses in Miyazaki Prefecture, despite the fact that the local farming population is by no means large. There are many visitors not just from Japan but also from abroad, and the Yuhi no Sato Development and Promotion Committee in Gokase Town alone accommodated around 4,800 people at farm guesthouses from 2006 to 2013, of which about 2,000 were foreign tourists (*33).

Photo 43: Foreign youth learn farm work first-hand

Photo 44: Forest therapy in Hinokage Town

Furthermore, Hinokage Town is actively involved in forest therapy, including receiving Japan's first "Forest Therapy Base" certification in 2006, and its "therapy roads" covering a total of 24 kilometers are visited by some 2,000 people each year (*34).

With populations becoming concentrated in urban areas around the world, the activities being pursued in this Site serve as a valuable model for increasing urbanites' appreciation for the forest, agricultural forestry, and mountain villages by providing them with enriching hands-on experiences.

(5) Hydroelectric initiatives leveraging water resources

At Nanaore Irrigation Canal, hydroelectric power is generated by leveraging the 209 meter height differential between the irrigation canal and the Gokase River riverbed below it. The maximum generation capacity is 2,300 kW, an amount of power sufficient for nearby Hinokage Town (population of approx. 4,500). Electricity is sold to the power company, and the profits are allocated to reduce levies paid by Hinokage Land Improvement District association members who manage the irrigation canal. This system has proved highly effective, with the levies paid by these members being around one-fourth of the amounts paid in neighboring districts.

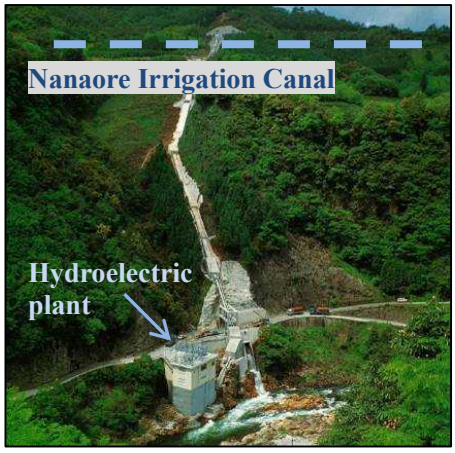


Photo 45: Nanaore Irrigation Canal hydro facility

[12] This refers to the promotion of health and rehabilitation through enjoying nature's richly varied scenery, aromas, etc., in a forest environment.

In addition, the Research Institute of Gokase Renewable Energy in Gokase Town, with the purpose of encouraging settlement by young people and making the Site more dynamic, is pursuing activities aimed at leveraging the electricity and profits produced by renewable energy sources in the Site (e.g., hydroelectric generation facilities[13]) in order to stimulate the vital agriculture industry and establish a general venue for promoting the Site consisting of a market for farm produce combined with a maternity center and care center. The institute is pushing ahead with initiatives that will lead to general promotion of the Site by leveraging its resources: it has established power-generating facilities ranging from 1 kW to 300 kW in five locations so far; formed research groups with local residents, including women; researched the aforementioned market for farm produce; and so forth.

Photo 46: Research group setting up power generation equipment

Photo 47: Women's research group

[13] Small-scale hydro generators generate around 10,000 kW or less.

V. Threats and Issues

(1) Stagnating agriculture and forestry product prices

The stagnation of agriculture and forestry product prices is a threat to the Site's sustainable composite system of agriculture and forestry. In particular, when it comes to the forests on which the system is founded, stagnation of wood prices is a serious concern (e.g., cedar wood is now around one-third of its peak value), and since revenues leading to profit cannot be obtained, there is an increasing number of planted forests across Japan that are being neglected without appropriate management (thinning, etc.), which is becoming a major problem.

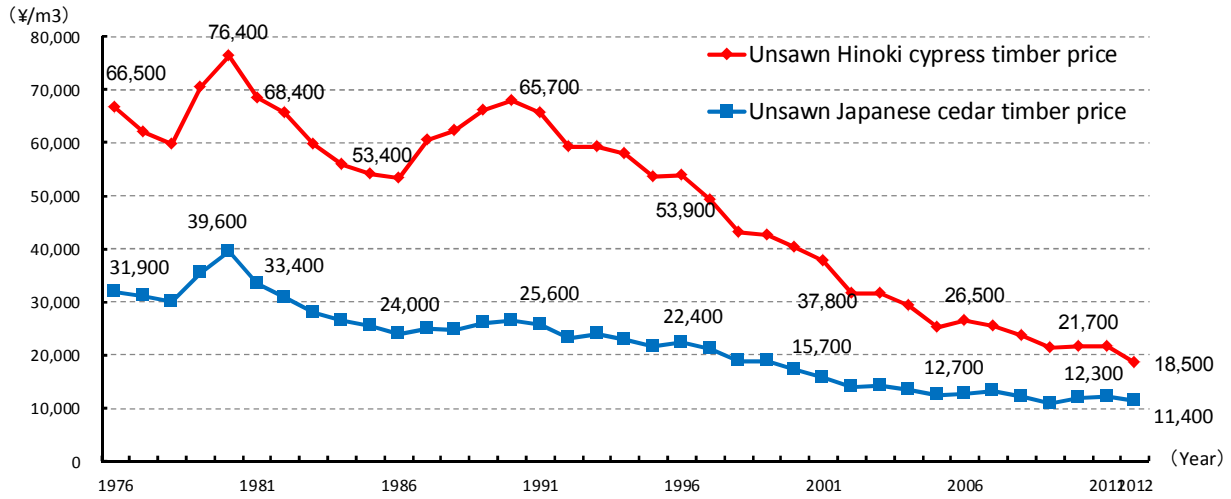


Figure 13: Change in Domestically Produced Wood Prices over Time (Based on Forestry Agency Documents)

In neglected planted forests, sunlight does not penetrate within the trees and forest floor vegetation declines. As a result, biodiversity is threatened, in addition to which the soil created from fallen leaves and undergrowth becomes poor, surface denudation of forest land occurs, and soil is more liable to be washed away. Not only are the various functions of the forest significantly impaired—the daily life of the people living nearby is also directly threatened. Moreover, since there is a lack of food for deer, boar, and the like which inhabit the forest, damage to agricultural products from birds and animals also becomes more severe, as they encroach on farm crops on cultivated land.

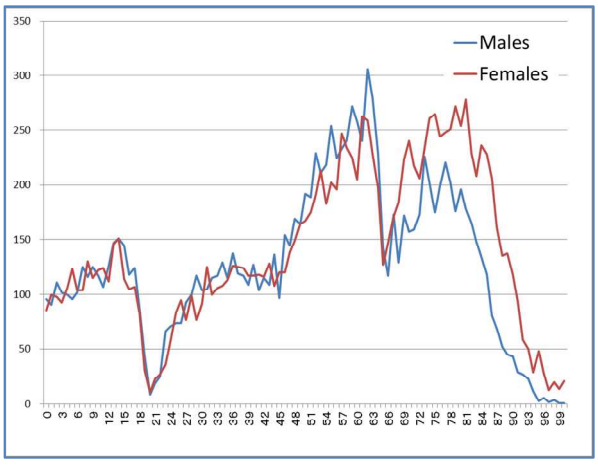


Figure 14: Age Distribution in the Site (2011)

With regard to this, the Site's forestry households are highly conscious of maintaining and conserving the forest, and Miyazaki Prefecture and the Site's towns and villages are actively collaborating on measures to support forestry households working to conserve the forest. For example, in addition to developing infrastructure for improving forest management, such as the best forest road network in Japan, Morotsuka Village is introducing initiatives that have been duly recognized (e.g., by receiving forest certification) as efforts to conserve the ecosystem through the cyclical use of resources by forestry households.

(2) Declining birthrate, aging population, and depopulation

Another major threat to this Site is the declining birthrate, aging population, and depopulation. At around 27,000, the

population of Takachihogo-Shiibayama is currently about one-third what it was during its peak in the late 1950s (over 70,000). Furthermore, the aging rate is high, with seniors aged 65 or older accounting for approximately 36% of the population—significantly exceeding the national average of 24% (*35). The movement of the younger generation out of the Site, due to economic reasons or a preference for urban living, is a major cause of this.

In order to address this, it is necessary to stabilize the economic foundations of farm and forestry households through developing mechanisms that will continuously support the sustainable composite system of agriculture and forestry and provide high added value to agriculture and forestry products, as well as further developing the living environment for residents. It is also necessary to pursue further exchange between cities and rural communities, rediscover the Site's appeal, and refine that appeal. The public and private sectors are now energetically moving forward together with such initiatives in Takachihogo-Shiibayama.

What's more, in Morotsuka Village, based on the stable employment conditions, a general incorporated company called Woodopia Morotsuka has been established, which is an organization of young people that takes commissions to perform appropriate forest management, as well as being involved in livestock raising, *kamairicha* tea processing, and developing and selling specialty goods. The 28 employees, who have an average age of 34.6 (as of June 1, 2014) are involved in nurturing agriculture and forestry workers through their engagement in production activities and the like.

Photo 48: Woodopia Morotsuka employees

VI. Practical Considerations

(1) Ongoing efforts to promote GIAHS

The concerned village and towns linked by the Forestopia vision along with the prefecture, agriculture and forestry groups, a community group formed for the purpose of promoting the Site, etc., established the GIAHS Promotion Association of Takachihogo-Shiibayama in March 2014, which has begun activities aimed at conserving the Site's sustainable composite system of agriculture and forestry and obtaining GIAHS certification.

This association involves representatives of the Site's farming and agriculture operators, such as agriculture and forestry co-operatives, the land improvement district that manages the rice terrace irrigation canal network, and the community group engaged in regional promotion, as well as various entities that support them, such as Miyazaki Prefecture, related towns and villages, and experts. It is also partnering with an academic institution (the University of Miyazaki), and in collaboration with government, agriculture and forestry operators, local residents, and research institutions, the association is pushing ahead with GIAHS promotion activities and efforts to conserve the Site's core sustainable composite system of agriculture and forestry.

(2) Potentials and opportunities for sustainability and management of GIAHS

The Site's sustainable composite system of agriculture and forestry has been conserved and passed on based on local people's conscious efforts to conserve the forest and arable land—valuable assets inherited from previous generations. As a result, the biodiversity of the forest, arable land, and the animals who inhabit them, as well as water for people living downstream, have been maintained. If the efforts of local farm and forestry households were to be globally recognized through the Site being certified as a GIAHS site, it would undoubtedly instill a sense of pride in those households that protect the forest, and it would provide great encouragement in terms of maintaining the Site's sustainable composite system of agriculture and forestry in future. As well, it would have a beneficial effect in terms of ensuring a new generation will replace today's aging generation of agriculture and forestry operators.

(3) Expected impact of GIAHS on society and ecology

In terms of the expected impacts of certification as a GIAHS site, it would add momentum to the effort to keep maintaining the Site's sustainable composite system of agriculture and forestry, and it is also expected that it would contribute greatly not just to promoting the agriculture and forestry through the development of a structure to maintain the system in future but also to supporting the ecosystem. In addition, it would serve as a trigger for exposing people outside the Site to the diverse functions of the forest and agriculture through exchange between cities and rural communities and eco-tourism.

Moreover, if the Site's composite system of agriculture and forestry—especially its composite management based on the balance of forestry and cultivation of forest-derived products, as symbolized by the mosaic forest—were to become widely known around the world through GIAHS, it is expected that it would serve as a model for countries seeking ways to balance forestry with forest resource conservation.

(4) Motivation of the local community, the local/national authorities and other relevant stakeholders

Driven by the GIAHS Promotion Association of Takachihogo-Shiibayama organized by concerned villages and towns along with the prefecture, agriculture and forestry groups as well as residents' groups formed to promote the Site are steadily

pushing forward with initiatives aimed at certification and carrying out measures required for the ongoing operation of the Site's sustainable composite system of agriculture and forestry.

Attached Documents

Annex-1: Map of the Site

Annex-2: Biodiversity List for Site's Agriculture (List of Cultivated Species, etc.)

Annex-3: Biodiversity List for the Site

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Map of Takachihogo-Shiibayama Site

Annex 1