

1. Regional Profile

Geographical Location	Country and Region	Nishinoshima Town, Shimane Prefecture, Japan, East Asia												
	Longitude and Latitude	North Latitude 36° 05' 37", East Longitude 132° 59' 4" (Nishinoshima Town hall)												
	Geographical Conditions	<ul style="list-style-type: none"> • Agricultural and fishing area • Approximately 600 km from Tokyo (capital) in straight-line distance • Approximately 80 km from Matsue City (prefectural capital) in straight-line distance 												
Natural Environment	Topography and Altitude	<ul style="list-style-type: none"> • Nishinoshima, being a volcanic island, is full of ups and downs. As bottoms of steep mountain slopes directly touch the sea, there is little flatland. • The highest point in the town is 451.7 m above sea level. 												
	Climate	<ul style="list-style-type: none"> • No weather station in Nishinoshima. In the neighboring town of Ama, the annual mean temperature is approximately 14.4°C and the annual precipitation is 1,662 mm. • The town falls under Cfa (humid subtropical climates) in the Koeppen climatic classification. 												
	Vegetation and Soil	<ul style="list-style-type: none"> • The vegetation of Nishinoshima Town is mainly forest with patches of pastureland. • Forests consist mainly of secondary forests of evergreen broad-leaved trees (chinquapin/evergreen oak coppice) and Japanese black pine afforestation areas. • The volcanic Oki Islands have a thin layer of top soil with limited nutrition. 												
	Biodiversity and Ecosystem	<ul style="list-style-type: none"> • Oki Islands are referred to as a biogeographically interesting region in which northern and southern faunas co-exist, and a variety of living organisms inhabit and grow. • Under such an environment, the extensive grassland used as pastures have a unique ecosystem where a diversity of grassland plants, grassland butterflies, coprophagous beetles, and others inhabit and grow, supported by a combination of the open natural environment near the sea and the production behavior of grazing. • With a number of coastlines plus diverse and extensive seaweed beds formed, the ecosystem in the coastal areas of Oki Islands is very rich. • The isolated Oki Islands function as a way station for migrating birds flying between Japan and the Asian Continent, with a variety of birds identified. 												
Social Background	Population and Changes in Population	<ul style="list-style-type: none"> • The population of Nishinoshima Town is 3,486 as of 2005, which has declined by half compared to the record high of 7,500 in 1950. • The aging rate (the ratio of people of 65 or older against the total population) of Nishinoshima Town as of 2005 is 36.7%. 												
	History and Culture	<ul style="list-style-type: none"> • While the Oki Islands are isolated far off in the sea, they had long been developing as a focal point of intercontinental sea traffic and have continued to develop its unique culture as a place for exiles and a port for “Kitamaebune”, a trading ship circulating around the country, to wait for the wind, while interacting with other regions. 												
	Regional Economy (Major Industries, Livelihood (including data and forecasts))	<ul style="list-style-type: none"> • The main industries of Nishinoshima Town are fishery, tourism, and stockbreeding. However, due to changes in the industry structure, depopulation, and the aging population, the local economy has been depressed in general. • The number of workers in each industry sector in 2005 was as follows. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Primary Industry (agriculture, forestry, and fishery)</td> <td style="text-align: center;">313</td> <td style="text-align: center;">20.4%</td> </tr> <tr> <td>Secondary Industry (mining, manufacturing, and construction)</td> <td style="text-align: center;">195</td> <td style="text-align: center;">12.7%</td> </tr> <tr> <td>Tertiary Industry (commerce, tourism, and others)</td> <td style="text-align: center;">1,024</td> <td style="text-align: center;">66.8%</td> </tr> <tr> <td>Total*</td> <td style="text-align: center;">1,533</td> <td style="text-align: center;">100.0%</td> </tr> </table> <p><i>*Note: As the percentages of workers in Primary Industry, Secondary Industry, and Tertiary Industry are rounded off to one decimal place, they may not add up to 100.0%.</i></p>		Primary Industry (agriculture, forestry, and fishery)	313	20.4%	Secondary Industry (mining, manufacturing, and construction)	195	12.7%	Tertiary Industry (commerce, tourism, and others)	1,024	66.8%	Total*	1,533
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2. Use and Management of Natural Resources in the Region

(1) Use and Management of Natural Resources in the Past and Present

1) Land Use Related to the Use and Management of Natural Resources in the Past and Present

- Nishinoshima Town used to have extensive “makihata” (a four-field system farming that combines grazing and field farming: details to follow), and around the villages were so-called “nen-nen (yearly)” fields where wheat, potatoes, soy beans, red beans, and other items were produced. However, “makihata” shrunk since the 20th century and were converted to forests and pastureland.
- After the World War II, there was a period when, given the effects of increased exits from farming caused by the decline in cultivation on “makihata” and of the forestry restoration measures of the government including a subsidy system for full-scale afforestation primarily of pine, the majority of “makihata” areas shifted to pine forests. Subsequently, however, the pine forests disappeared due to a major damage from pine bark beetles.
- However, in the western area of the island (former Uragou Town) where farm roads had been actively constructed, grazing continued thereafter as part of stockbreeding, and hence the landscape consisting of grasslands primarily of turf and sparse woods has been retained up to this day. On the other hand, the eastern side of the island (former Kuroki Village) where the construction of woodland roads was delayed, locations used for grazing as stockbreeding were limited compared to the west side, and shrubs invaded the area after the devastation of pine trees to form a secondary forest, and the area shifted to forestland.
- Nevertheless, the old divisions of “makihata” still exist today, and there are 19 lots of public pasture, with a total area of 2,295.5 ha, and 947 heads of cattle and 52 horses are bred as of the fiscal year 2009.
- Pastures still have “aigaki” (stone fences that divide one lot of pasture from another) and geographical features with traces of terraced fields that bring to date the scenery of the old “makihata” days, which provide a unique landscape.

2) Objectives and Details of the Current Use and Management of Natural Resources

[Production of beef cattle and horses]

- The production of beef cattle is one of the key industries of Nishinoshima, accounting for approximately 120 million yen, which is almost 100% of the town’s agricultural output as of the fiscal year 2009, and 37 stock breeding farms breed 947 heads of beef cattle.
- The stockbreeding method adopted in Nishinoshima is seasonal grazing using public pastures (cattle is bred in the cow shed during the winter months of December through March and in the public pasture from spring through autumn). Breeding is managed entirely for the purpose of producing calves, and no fattening management is conducted.
- In addition to cattle breeding, the production of horses for meat is also performed. Horses are in grazing throughout the year, and as of the fiscal year 2009, 11 stockbreeding farms breed 52 heads of horses using public pastures on the west side of the island. In addition, four stallion horses are bred under the management of the agricultural cooperative union.
- According to the Nishinoshima Town Pasture Management Regulation, there are 19 lots of public pasture, with a total area of 2,295.5 ha. As of 2010, however, only 11 lots are used for grazing.

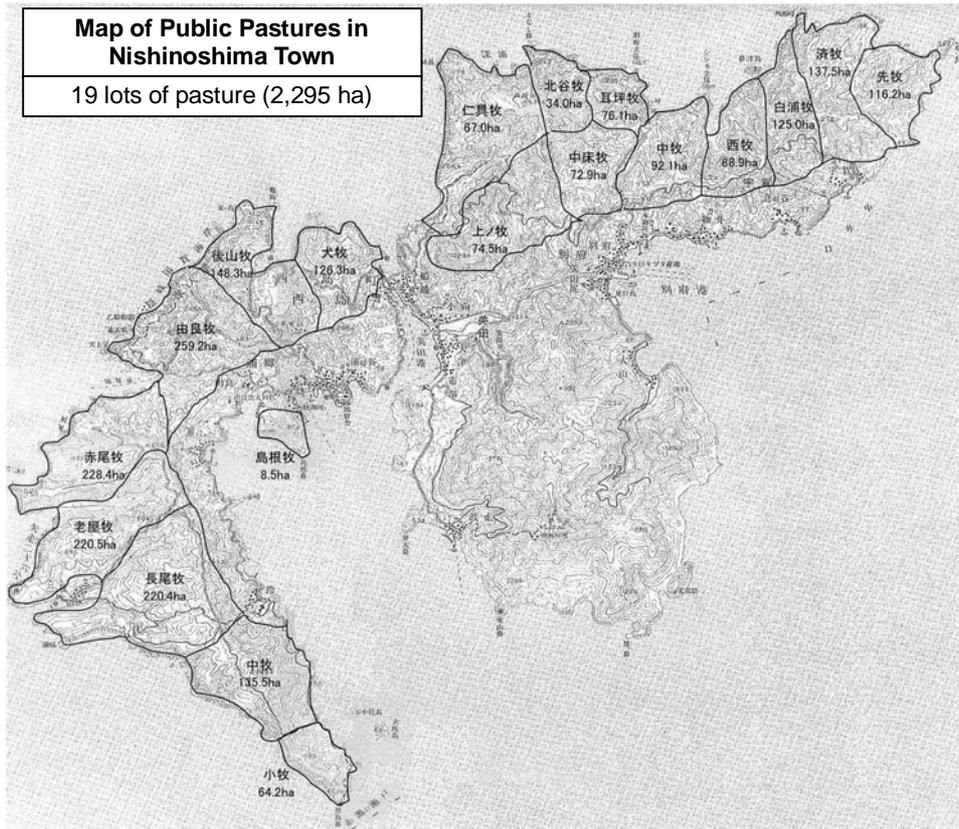


Figure: Locations and Divisions of Public Pastures in Nishinoshima Town
(Source: material issued by Nishinoshima Town Regional Promotion Department)

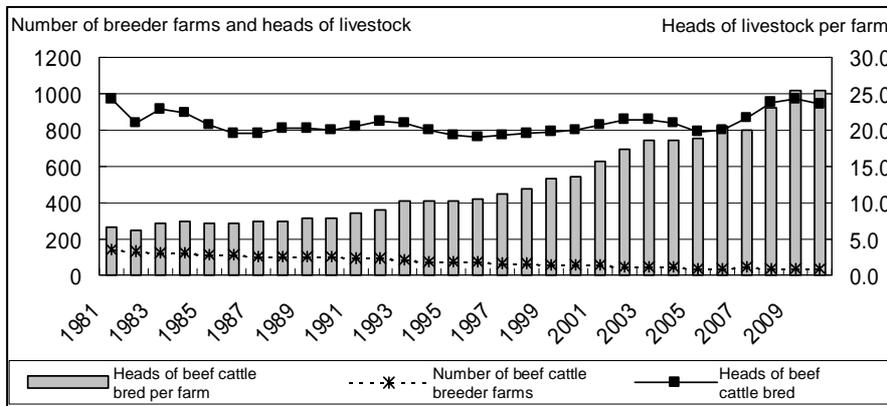


Figure: Breeding of Beef Cattle
(Source: material issued by Nishinoshima Town Regional Promotion Department)

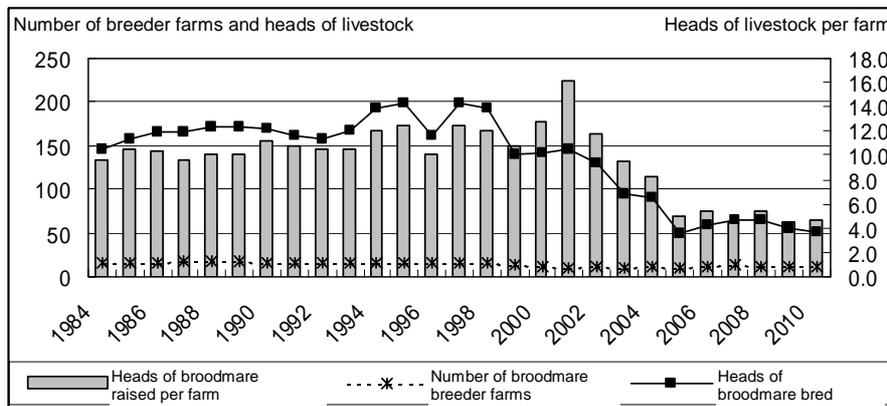


Figure: Breeding of Broodmares
(Source: material issued by Nishinoshima Town Regional Promotion Department)

[Other]

- Fishery is the largest industry in Nishinoshima Town, and horse mackerels, sardines, chub mackerels, red snow crabs, and Japanese common squids are the largest fisheries.
- Crop farming is primarily small-scale subsistence farming with the largest crop acreage for forage crops for stockbreeding. Paddy rice and vegetables are also produced on a small scale.

(2) Problems Associated with the Use and Management of Natural Resources and their Impact on Biodiversity

[System of use and management of public pastures that succeeded “makihata”]

- “Makihata” in Nishinoshima rapidly declined since the early 20th century and were converted into forests and pasturelands, and by the latter half of 1960’s, field farming on “makihata” disappeared completely. However, “makihata” continues to be used as public pasture for grazing even today, and namely on the western side of the island (the former Uragou Town), the landscape unique to Oki comprised of grasslands mainly of turf and sparse woods, is maintained.
- The system of use and management concerning grazing on “makihata” had the following characteristics.
 - (1) While maintaining the land ownership rights of individuals, all residents on the island were given the right to participate in grazing.
 - (2) The location and timing of grazing combined with field farming were strictly determined per unit of “oaza” (former village) and participants were obliged to follow the instructions of a general leader called “mokuji”.
 - (3) In the old days, the task of maintaining and managing the fences on pastures was shared equally among all village residents (work consignment for local residents) and while the unit of allocation grew bigger, i.e. from the individual level to neighborhood, and on to village, the basic system of cooperative management was maintained.
- With the town of Nishinoshima serving the management function, the former “makihata” areas were identified as public pastures, and by following the customary system on grazing described above, Nishinoshima Town Pasture Management Rules were established in 1963, and today, the pastures are managed in the following manner.
 - (1) By paying an annual grazing fee of 5,500 yen per head, anyone can participate in cattle and horse grazing without having to own land within the area of public pasture, as long as the individual is a resident of the island.
 - (2) Pasture lots, in principle, are assigned in certain numbers to the villages where the people of the island reside.
 - (3) The town of Nishinoshima outsources the management of fences to Oki Dozen Agricultural Cooperative Union who is responsible for performing maintenance tasks, and the grazing fees paid by those engaged in grazing are appropriated to the management cost.

[Problems associated with the use and management of public pastures]

- The new cooperative management system for public pastures described above has been operated without any problems thus far. However, the following issues are beginning to rise due to the decline in the grazing volume (the decline is noticeable especially for horses) caused by factors such as the aging of livestock breeders, the emergence of certain farms handling large-scale grazing, differences in population size among villages, the termination of grazing by some landowners within the public pasture area, and the

absence of landowners as some of them have left the island.

- (1) Usage is concentrated on certain pastures offering ease of use, causing the lack of fodder for livestock in some pastures while others with limited grazing volume are turning into woods as shrubs flourish and revealing such growing changes in the grazing environment on pastures, which calls for the need to make adjustments in the grazing volume between pastures.
- (2) If the grazing volume decreases, grazing fees alone cannot cover the cost required for the maintenance of fences on pastures. The agricultural cooperative union has been implementing measures to secure funding, such as launching a state or prefectural support project. Nevertheless, there remains the difficulty of exercising proper maintenance across the entire stretch of fences, and more areas are coming to require maintenance tasks such as elimination of shrubs.
- (3) In the “makihata” days, when one farm would breed only several head of cattle and horses and a general leader called “mokuji” was available to manage the overall pasture, accidents such as death of cattle and horses due to weakened physical conditions or falls could be prevented. However, with the management of cattle and horses left to individuals, the number of deaths of cattle and horses in pastures has been on the rise as farms with large grazing volume are unable to exercise thorough supervision over the livestock or cannot secure sufficient amount of feeds for livestock depending on the growth of turf on the pasture. Today, as cattle and horses are insured, farms can avoid incurring damages by receiving insurance payments. Yet the increasing number of deaths can hike insurance premiums, and consequently, some farmers might not be able to afford insurance.
- (4) As grazing fees are used to the maintenance and management of fences on pastures and not distributed back to landowners, it is possible that if there is an increase in the number of landowners not engaged in grazing, conflicts of interest may arise between stockbreeders handling a large volume of livestock and landowners.
- (5) When the agricultural cooperative union performs installation and repair of pasture fences, elimination of shrubs, and construction and management of farm roads, as a general rule, approval must be obtained from each of the landowners within the applicable lots of pasture although traditionally, maintenance tasks could be carried out as long as the union informed the district governor or a relative, etc. of the landowner even when any landowner was not resident on the island. However, when implementing public works, etc., in some cases customary procedures of the island might not be permitted and hence strict steps must be taken.

[Biodiversity of pastureland and changes in recent years]

- The Oki Islands are referred to as a biogeographically interesting region in which northern and southern-type organisms co-exist and they inhabit in great diversity. Under such environment, the extensive pastureland (grassland) inherited on former “makihata” has a unique ecosystem, supported by a combination of the open, natural environment near the sea and the production behavior of grazing.
- In the Oki Islands’ grasslands primarily covered with turf and in the grasslands, a great variety of plants including grassland plants, such as *scilla scilloides*, blackberry lily, abutilon, and Japanese clematis, and coastal plants, such as *boehmeria biloba* inhabit. Given that many of these plants are grass eaten by butterflies or plants that were used by human beings as food and medicine in the past, it is evident that the flora of the grasslands was formed under the complex relationships among animals and plants including humans. In addition, in the grasslands used as pastures, unique insects including a variety of grassland butterflies and coprophagous beetles inhabit.
- The unique grassland ecosystem that formed through the many years of grazing is maintained to some extent even today through grazing on public pastures. However, it is deteriorating due to various factors

such as the decline in the area of grasslands caused by reforestation on “makihata” and the flourishing shrubs, the introduction of western pasture grass under the grassland reform project, and the spraying of herbicide in air to prevent pine trees from dying. For example, great eastern silver stripe (*Fabriciana nerippe*) and gray-pointed pierrot (*Niphanda fusca*) (both under classification I of Red List of Threatened Species of the Ministry of the Environment) that used to inhabit widely in the pasturelands of Nishinoshima have been decreasing drastically in the recent years, raising the concern for extinction.

(3) Regional Plans and Other Measures toward a Resolution of the Above Problems

- The residents of Nishinoshima are facing difficulties from the rapid aging and drop in population, and cannot be considered to hold adequate understanding and awareness for the maintenance of public pastures originating from “makihata” and the importance of cooperative management system.
- Although the industry of stockbreeding by grazing emerged naturally and transitionally with the use of pastures inherited on “makihata” and traditional practices based on cooperative use and management have been performed thus far, there are calls for the need to develop clear visions for the future regarding stockbreeding centered around grazing and promotion of resident participation in cattle and horse breeding, review the contents of existing rules and roles of related parties, and improve the mechanism for cooperative use and management of pastures to make it a sustainable system to be passed on to future generations.
- Although the town of Nishinoshima and Oki Dozen Agricultural Cooperative Union are aware of such problems arising in the public pastures, the current status is that, there are no specific measures in place since no major problems have been encountered thus far.
- However, initiatives are beginning to be taken where if the grazing volume at a pasture becomes tight, the agricultural cooperative union, in the place of the general leader “mokuji” of the old days, pursues to make adjustments by asking some farms to transfer the grazing site to those with less heads of livestock in order to average out the number of cattle and horses bred per pasture.
- Furthermore, a voluntary organization called “Group to Pass On Makihata to Future Generations” has been established to collect and deliver information for clarifying the value of “makihata” and perform maintenance activities on stone fences and pastures (details to follow).

<<Overview of Makihata in Oki Islands>>

[Structure of living and working space and “makihata” in Oki Islands]

- The living and working environment centered around the villages in Oki Islands until the latter half of 1950’s was generally as illustrated in the figure. Around the village were the “nen-nen batake (yearly fields)” used every year for cropping, and “makihata” existed nearby.
- “Makihata”’s were divided into lots by stone fences called “aigaki” (still exist today as dividers for public pastures). Meanwhile, in each district, the village, the “nen-nen” fields, and “makihata” were divided by stone fences called “komegaki (or mawarigaki)”.

[Four-field system farming of “makihata”]

- In “makihata”, a four-field system farming method was adopted in which four or more lots of land (“kuboku”) were grouped to rotate crop farming and livestock grazing in a four-year cycle. This method is known to have been established as early as by the latter half of the 16th century and implemented in Oki by the second half of 1950’s.
- The local residents, in order to grow a well-balanced set of agricultural products, owned farmland in multiple lots (“kuboku”). Livestock was also privately owned. Landowners needed to follow the rotation of land use for each “kuboku” and perform crop farming and grazing.
- The content of the land use and the order of rotation were not consistent throughout all areas of Oki Islands and differed depending on the natural conditions and the demand for agricultural and livestock products in each area.
- “Makihata” cultivation centered on terraced fields called “tana (shelf)” where narrow strips of field were formed along the contour lines, which viewed from a distance provided a unique striped landscape.
- The grassland on top of a hill was called “toko”, and was used as a place to feed and rest cattle and horses. Although “toko” was fertile from abundant supply of livestock dung, it, being on top of a hill, revealed the risk of getting easily damaged by strong winds. Therefore, seeding was performed by selecting locations that offered good efficiency.
- Within “makihata”, not only farmlands and pastures but also forests and thickets were kept and they were used as sources of fuel and construction materials.

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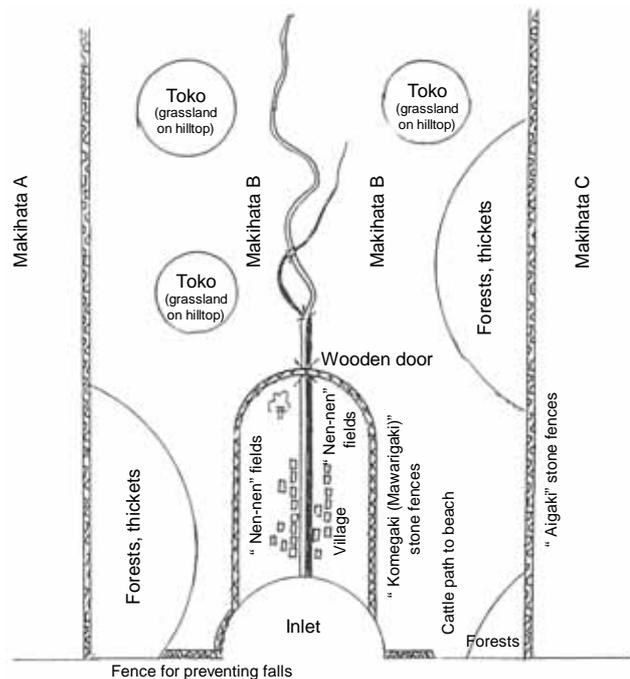


Figure: Living and Working Space Centered Around the Village in Okidozen
(Source: Kanichi Nomoto “Rough Sketch of Makihata Folklore of Oki Islands”)

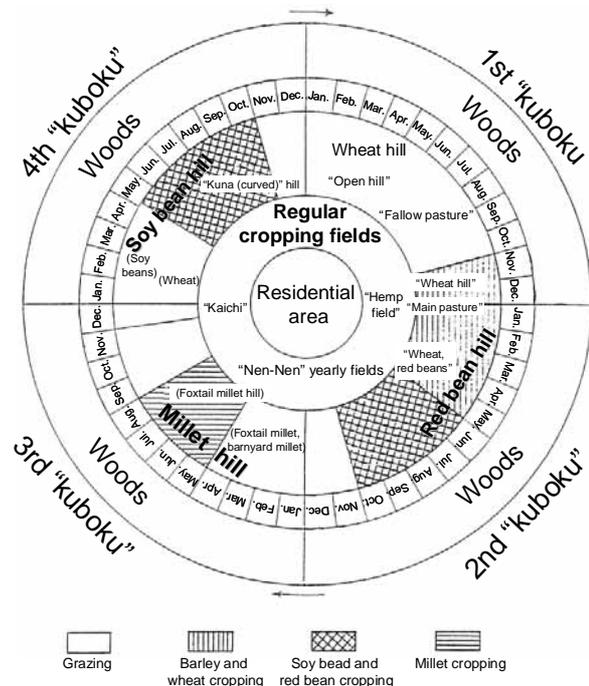


Figure: An Example of Four-Field System Farming in Makihata
(Source: Tokio Mitsuhashi “A Historical Study of Oki Makihata”)

	1 st year	2 nd year	3 rd year	4 th year		
1 st "kuboku" (lot)	Wheat hill	Red bean hill	Millet hill	Soy bean hill		
	Grazing	Wheat	Red bean	Grazing		
	October	May	October	April	August	May
2 nd "kuboku"	Red bean hill	Millet hill	Soy bean hill	Wheat hill		
	May	October	April	August	May	October
3 rd "kuboku"	Millet hill	Soy bean hill	Wheat hill	Red bean hill		
	April	August	May	October	October	May
4 th "kuboku"	Soy bean hill	Wheat hill	Red bean hill	Millet hill		
	May	October	October	May	October	April

Figure: An Example of Rotation in Makihata
(Source: Tokio Mitsuhashi "A Historical Study of Oki Makihata")



Picture: Aigaki Still Existing Today
(stone fence that divide "kuboku")



Picture: Traces of Tana (terraced fields)
Along Contour Line

[System of cooperative use and management of "makihata"]

- Since the old days, a leader called "mokuji" was assigned to each "makihata" for managing various matters concerning grazing of cattle and horses, and based on his instructions, livestock was cooperatively managed. Although cropping on "makihata" was terminated, grazing of cattle and horses continued, and even today when "makihata" have become public pastures, the system of cooperative management over cattle and horses still remains in operation.
- Primary tasks of the leader "mokuji" include daily supervision of cattle and horses, monitoring and repair of stone fences and others, determination and supervision for transferring of livestock between "kuboku" (pasture transferring), and management of drinking spots for cattle.
- In the past, tasks that required much labor such as all-at-once repair of stone fences and pasture transferring were performed by the entire village under the instructions of "mokuji".

[Principal characteristics of "makihata"]

- Although the soil of Oki Islands lacks nutrition and is not suitable for agriculture, productivity of crop farming could be enhanced through supplying manure to soil under the method of rotation including livestock grazing.
- The mechanism of cooperative use of "makihata" restrained inappropriate use of land by specific landowners, resulting in sustainable use of land and natural resources for the entire region.
- By cultivating plants of the grass family (*Poaceae*), which are abundant in organic substances, and leguminous plants, which have the nitrogen fixation ability, one after another, the fertility of soil was maintained.

3. Details

(1) Overview

Although “makihata” itself is not succeeded in Nishinoshima today, breeding and production of beef cattle and horses by grazing remains to be the primary industry of the region, and the system originated in “makihata” is still maintained in the industry.

Location	Nishinoshima Town, Shimane Prefecture
Involved Parties	<p>[Nishinoshima Town] Management of public pastures</p> <p>[Oki Dozen Agricultural Cooperative Union] Under the management consignment received from the town of Nishinoshima, the Union performs maintenance of common facilities such as pasture fences and water holes, eliminates shrubs, makes necessary adjustments between farms and pastures, and leases stallions and cattle.</p> <p>[Stockbreeding farms] By paying grazing fees for the use of public pastures, the farms engage in grazing while managing cattle and horses owned.</p> <p>[Landowners] As the area within public pastures used to be “makihata”, residents of each village own land in pieces, and the land, for the most part, is still privately owned. However, the use of land as a public pasture for grazing in accordance with traditional customs is allowed.</p> <p>[Group to Pass On “Makihata” to Future Generations] This is a voluntary organization formed by general local residents not engaged in grazing, etc., which initiates efforts to clarify and widely convey the value of “makihata” as well as performs voluntary activities such as excavating “aigaki” stone fences installed in the “makihata” days and cutting down shrubs around the fences.</p>
Background and history	<p>[Tradition of “makihata”]</p> <ul style="list-style-type: none"> “Makihata”, a unique system in Oki that combines stockbreeding and crop farming, given that it is described in “Azuma Kagami”, a historical chronicle of the 12th century, is considered to have a very long history. Until the latter half of the 19th century, “makihata” accounted for the majority of use of land in Nishinoshima. <p>[Decline in “makihata” and conversion of land use]</p> <ul style="list-style-type: none"> In Nishinoshima, “makihata” had been rapidly converted to forests and pasturelands since the early 20th century, and completely disappeared by the latter half of 1960’s. What used to be “makihata” are currently used as public pastures for grazing beef cattle and horses.
Purpose and objectives	Grazing of beef cattle and horses for meat
Main contents	<p>[Production of beef cattle and horses that succeed the tradition of “makihata” in Nishinoshima]</p> <ul style="list-style-type: none"> The seasonal cycle of beef cattle production in Nishinoshima is comprised of breeding in the cowshed during the winter season and grazing in the public pasture from spring to fall. The production is entirely breeding management (the management of having mother cows give birth to calves for sale). Beef cattle and horse production involves grazing in the public pastures throughout the year and selling ponies to horse meat producing areas such as Kumamoto. Any resident in Nishinoshima can participate in grazing using the public pasture by paying a grazing fee of 5,500 yen per head per year. In public pastures, the system of “grazing management per lot of pasture” and “cooperative use and management” originated in “makihata” remains. <p>[Promotion of production of “Oki beef”]</p> <ul style="list-style-type: none"> Beef cattle production is the core industry for the entire Oki Islands including Nishinoshima, and various initiatives are being taken to promote production, one of which is to pursue branding as “Oki beef, born and raised on the islands”. Efforts are being made to sell breeding calves born and raised in Nishinoshima in places such as Nakanoshima (Ama Town).
Main achievements	<ul style="list-style-type: none"> Through the system of “management per lot of pasture” and “cooperative use and management” originated in “makihata”, sustainable use and management of land and natural resources are maintained. Continuation of grazing in public pastures contributes to maintaining the unique landscape of Oki comprised of grasslands of turf and sparse woods mainly in the western area of the island, geographic features with traces of terraced fields, stone fences that divide land, and other features, as well as to preserving the grassland ecosystem which is extremely scarce in Japan.



Picture: Public Pasture in Nishinoshima Town

(2) Details of the Use and Management of Natural Resources from the “Five Perspectives” of the Satoyama Initiative

The table below shows the primary relevance of this case to the five perspectives.

Details are given below the table for the perspectives which have high relevance (items with the “ ” mark in the table).

Five Perspectives	Relevance to this Case	
	Degree of Relevance	Summary of Relevance
1) Resource use within the carrying capacity and resilience of the environment 3) Recognition of the value and importance of local traditions and cultures		<ul style="list-style-type: none"> Today’s beef cattle grazing has succeeded the system of cooperative use of pasturelands in a unit of pasture lot originated in “makihata” and contributes greatly to sustainable use and management of land and natural resources. <p><i>* Details to follow.</i></p>
3) Recognition of the value and importance of local traditions and cultures 4) Natural resource management by various participating and cooperating entities		<ul style="list-style-type: none"> Nishinoshima Town, Oki Dozen Agricultural Cooperative Union, stockbreeding farms, landowners, and others work together in maintaining the system of cooperative use and management of public pastures based on the customary practices of the “makihata” days. The “Group to Pass On Makihata to Future Generations” engages in volunteer activities aimed at distributing information for passing on the wisdom of predecessors known as “makihata” to future generations and protecting the unique landscape of Oki comprised of its precious grasslands and sparse woods, geographic features with traces of terraced fields, stone fences that divide land, and other characteristics. <p><i>* Details to follow.</i></p>
2) Cyclic use of natural resources	○	<ul style="list-style-type: none"> Under the old four-field farming system, an extremely effective system of cyclic use of resources had been established. However, today, only the use for grazing is applied. Although livestock dung contributes to the growth of turf and other plants and to supplying nutrition to the source of livestock feeds, no other relevance from the perspective of circulatory use of resources can be recognized.
5) Contributions to local socio-economics		<ul style="list-style-type: none"> Based on the system of cooperative use and management of pasturelands, high production efficiency is maintained and stockbreeding by production of beef cattle and horses are sustained. Efforts to pursue branding of “Oki beef” are being made. <p><i>* Details to follow.</i></p>

1) Resource use within the carrying capacity and resilience of the environment

3) Recognition of the value and importance of local traditions and cultures

** As stockbreeding in Oki involves the use of public pastures for grazing based on traditional knowledge concerning “makihata”, the two perspectives cannot be separated and will be described together below.*

[Pursuit of stockbreeding industry by making effective use of “makihata” tradition]

- As described above, “makihata” with its unique, long history on the Oki Islands, was a superior system that enhanced land productivity through rotation of livestock grazing and crop farming as well as enabled the use of land and natural resources within the limit of the carrying capacity and the resilience of the environment through shared use.
- In the current beef cattle grazing in Nishinoshima, although the relationship with crop farming has been lost, the industry of stockbreeding by grazing developed naturally and transitionally with the use of pasture lots originated in “makihata”, and the system of utilizing public pastures for grazing based on the customary

practices of the “makihata” days has been succeeded, contributing greatly to achieving sustainable use and management of land and natural resources.

[System of sustainable use through management of grazing by lot of pasture]

- Under the past “makihata” structure, four or more lots of pasture (“kuboku”) per village (the former Mita Village, Beppu Village, Uka Village and Uragou Village) were rotated in a four-year-cycle, and each “kuboku” was clearly divided by stone fences, etc.
- These divisions into “kuboku” are still maintained today, and the current 19 lots of public pastures have almost entirely succeeded the previous divisions of “makihata”.
- Today, the number of grazing cattle and horses and the frequency and timing of grazing are managed per each of the 19 pasture lots divided, and the farmers who can use the lots are assigned per village.
- Oki Dozen Agricultural Cooperative Union, having received consignment of management of public pastures from Nishinoshima town, when the grazing volume of a specific pasture lot becomes tight, would make necessary adjustments by asking some farmers to transfer the grazing location to lots that have less grazing intensity. As such, the Union undertakes part of the roles of “mokuji”, who was in charge of managing the pastures in the “makihata” days, and efforts are being initiated to promote favorable growth of grass on the pastures by making efforts to average out the number of livestock per pasture lot.

3) Recognition of the value and importance of local traditions and cultures

4) Natural resource management by various participating and cooperating entities

- * *Given the system of shared management of public pastures based on the customary practices of the “makihata” days and the initiatives for identifying new value in traditional knowledge of “makihata”, these two perspectives cannot be separated and thus will be described together below.*

[System of cooperative management succeeded to the present]

- Under the past “makihata” framework, there was a system of cooperative management that followed the instructions of a leader called “mokuji”. “Makihata” was divided into four large lots (“kuboku”) by each village, and crops determined for the year were cultivated on privately-owned fields in each of the lots while privately owned cattle and horses were moved to a “kuboku” called “akiyama (open hill)” for grazing. As such, the system of agricultural production and land use according to common rules played an important role.
- “Mokuji” was consigned by all farms within the village to make decisions on what crops to cultivate at which area and when, manage health and breeding conditions of cattle and horses of each farm, exercise surveillance over any intrusion of cattle and horses into the neighboring “nen-nen” cropping fields, manage the maintenance of stone fences, etc. that divide the lots, and other management tasks within “makihata”. Farmers shared the management cost by each paying a management fee called “mokuji fee”, in proportion to the area of fields owned within “makihata”, or appropriating what earned from the common property within “makihata”, rent out at free of charge.
- Such a system of shared management consignment and use of land by area has been passed on to the current system of use and management of pastureland for grazing of beef cattle and horses.
- All “makihata” that used to be managed respectively by each of the four villages on the island (the former Mita Village, Beppu Village, Uka Village and Uragou Village) is currently placed under the management of Nishinoshima as public pastures. These public pastures have been divided into 19 lots by succeeding the previous divisions of the past “makihata” days, and each lot of pasture is used for grazing of cattle and horses irrespective of the divisions by land ownership.
- To conduct grazing on a public pasture, the stockbreeding farm pays a fee of 5,500 yen per head per year, which is not paid to the landowner but is appropriated to the common expenses for managing and maintaining “makihata”. (Currently, Oki Dozen Agricultural Cooperative Union is responsible for the maintenance of pastures based on the management consignment received from Nishinoshima Town, fees are paid by Nishinoshima Town to the agricultural cooperative union as management fee.)
- Landowners of public pastures accept the use of pastures for grazing in accordance with the customary

practices of the past “makihata” days regardless of whether or not the owners are engaged in grazing of cattle and horses, and the aforementioned system of cooperative management regardless of land ownership has been succeeded.

[Identification of new value through participation by new entity]

- At Nishinoshima, a new voluntary group comprised of general local residents called Group to Pass On Makihata to Future Generations was formed. The purpose of this Group is “community revitalization” through succession and revival of day-to-day culture called “makihata” unique to the region.
- The Group collects and delivers information on “makihata”. It also engages in voluntary activities to protect the unique landscape of “makihata” comprised of the island’s precious grasslands and sparse woods, geographic features with traces of terraced fields, stone fences, and other characteristics, by collaborating with other residents and organizations in excavating “aigaki” (stone fences, etc.) placed during the “makihata” days to divide the pastures, and trimming down shrubs. Furthermore, the group is making preparations to pursue a new activity of developing local specialty from unused resources in locations where “makihata” used to exist, such as Japanese pepper, Japanese silverberry, and *boehmeria biloba*.
- The Group has set long-term objectives such as the introduction of an owner system for cattle and horses and the revival of four-field farming system (“makihata”) in limited regions.
- As described, supported by the participation of a new entity composed of general local residents, etc. not directly involved in grazing of cattle and horses, the community, in addition to pursuing stockbreeding based on traditional knowledge and techniques of “makihata”, is indeed about to take a step forward towards implementing initiatives of regional revitalization by extensively utilizing the traditional knowledge on “makihata” as a local resource.

5) Contributions to local socio-economics

[High production efficiency based on the system of cooperative use and management of pastureland]

- The production of beef cattle is one of the key industries of Nishinoshima, accounting for approximately 120 million yen, which is almost 100% of the town’s agricultural output as of the fiscal year 2009, and 37 livestock farms breed 947 heads of beef cattle.
- The system of shared use restrains production costs and labor. The annual production cost for breeding cattle in Nishinoshima is said to be roughly 150,000 yen per head, which is lower than that for other areas in Japan. The production cost primarily includes forage cost, medical cost, and insurance cost, but facility costs for items such as cowsheds and light trucks are not included.
- In addition to cattle, production of horses for meat is performed, and as of the fiscal year 2009, 11 farms breed 52 horses in the public pastures. In addition, four stallions are raised under the management of the agricultural cooperative union.

[Branding of beef cattle produced on the Oki Islands]

- Calves born and raised on the Oki Islands including Nishinoshima are known for high-quality, tender meat as they are raised feeding on pasture rich in minerals through grazing.
- Calves of the Oki Islands used to be shipped exclusively to famous fattening areas in Japan and distributed in the market with brands such as “Kobe beef” and “Maezawa beef”. Recently, however, efforts are being made to promote branding as “Oki beef, born and raised on the islands”.
- “Oki beef, born and raised on the islands” refers to a nulliparous cow born and raised on the Oki Islands (Ama Town, Nishinoshima Town, Chibu Village, and Okinoshima Town), which has been ranked as A4 or above by the Japan Meat Grading Association and for which the “Oki Beef Shipping Certificate” has been issued.
- As Oki beef is very highly recognized on the market, further enhancing the recognition of the brand going forward is expected to contribute to promoting the beef cattle production.

End