

Forest Management in Buffer Zones in the Northern Part of Okinawa Island*

*Partly excerpted from the Policy for the Promotion of the Yambaru Model Forestry (Measures and Policies)

1. Background to the Development of the Policy for the Promotion of the Yambaru Model Forestry (Measures and Policies)

Forests in the northern part of Okinawa Island had historically been owned as commons known as *somayama* since the time of the Ryukyu Kingdom, and today the ratio of national forests and other public forests (owned by prefectural and municipal governments) is as high as 76%. The prefectural government of Okinawa and municipal governments of Kunigami Village, Ogimi Village, and Higashi Village (to be referred to collectively as “the three villages of Yambaru” in this document) have been working together with forestry associations that conduct forestry operations for integral forest management.

Although large-scale logging was carried out during the postwar reconstruction period after World War II, the size of logging areas in recent years has decreased to about 1/70. As trees and forests have grown over time and circular forestry, which plants trees in harvested sites, has been promoted, the total forest mass has increased to approximately three times as compared to that in 1972, when Okinawa was returned to Japan. In addition, forests have grown older, and 84% of them were 41 years old or older as of 2008. The amount of forest resource has been increasing. The present forests that exist in the northern part of Okinawa Island have already recovered from deterioration during the postwar reconstruction period and are in good condition in their long history. Clear cutting in small areas and forest-planning and forest-nursing operations are conducted on a continuous basis.

Against this backdrop, social demands for the forests of Yambaru have become diverse in recent years, including, for the forests that are distributed in the three villages of Yambaru, appropriate management to ensure a high degree of multi-functionality of these forests and maintain and enhance it, the revitalization of local forestry industries, and new uses of forests as a means to secure job opportunities. In addition, more people call for conservation of the outstanding natural environment that has rich biodiversity.

Okinawa Prefecture adopted the Vision for the 21st Century and the New General Plan for the Vision for the 21st Century of Okinawa in pursuit of sustainable development of Okinawa, based on the Act on Special Measures for the Promotion of Okinawa. This vision includes maintenance and enhancement of forests’ multi-functionality and promotion of sustainable forestry operations, among others.

To strike a balance between conservation and use in light of the aforementioned basic

measures, Okinawa Prefecture adopted the Policy for the Promotion of Yambaru Model Forestry (Measures and Policies) in March 2013 to promote Yambaru Model Forestry, combining sustainable, circular forestry and forest product industries with nature-experiencing activities that are in harmony with the environment. Yambaru Model Forestry is to be promoted based on scientific information and in consultation with academic experts. Coordination is to be made among the national, prefectural, and municipal governments, forestry operators, related organizations, etc. Measures are to be taken in consideration of various opinions from residents of Okinawa Prefecture.

The same policy provided zoning regarding the protection and use of forests, which was amended in September 2019 for the purposes of ensuring consistency with the classification of Yambaru National Park.

2. Forest Initiatives and Policies for Yambaru's Three Villages

a) Forest Usage Divisions (Zoning)

Conservation and usage divisions will be established according to functions that should be emphasized from among the functions that the forest possesses. This is to allow for the forest's multi-functionality to be adequately exhibited, while promoting the planned use of the forest and appropriate forest management.

For the forests in Yambaru's three villages, four classifications will be established in order to divide up usage: "Natural environment conservation districts," "Water and soil conservation districts," "Forestry production districts," and "Forest usage districts". These accord with the multi-functionality possessed by the forest, particularly its "Biodiversity conservation function", "Water source protection function", "Function for producing lumber and other products", and "Public health and culture function". This will be done with the goals of maintaining diverse forest ecosystems, maintaining and augmenting functions that stably underpin the dams and rivers that serve as water reservoirs in regions of the main island of Okinawa, and promoting sustainable, recycling-oriented forestry. A large part of the World Heritage buffer zone is the forestry production district (emphasizing the natural environment).

• Definitions for the Usage Divisions for Yambaru’s Three Villages

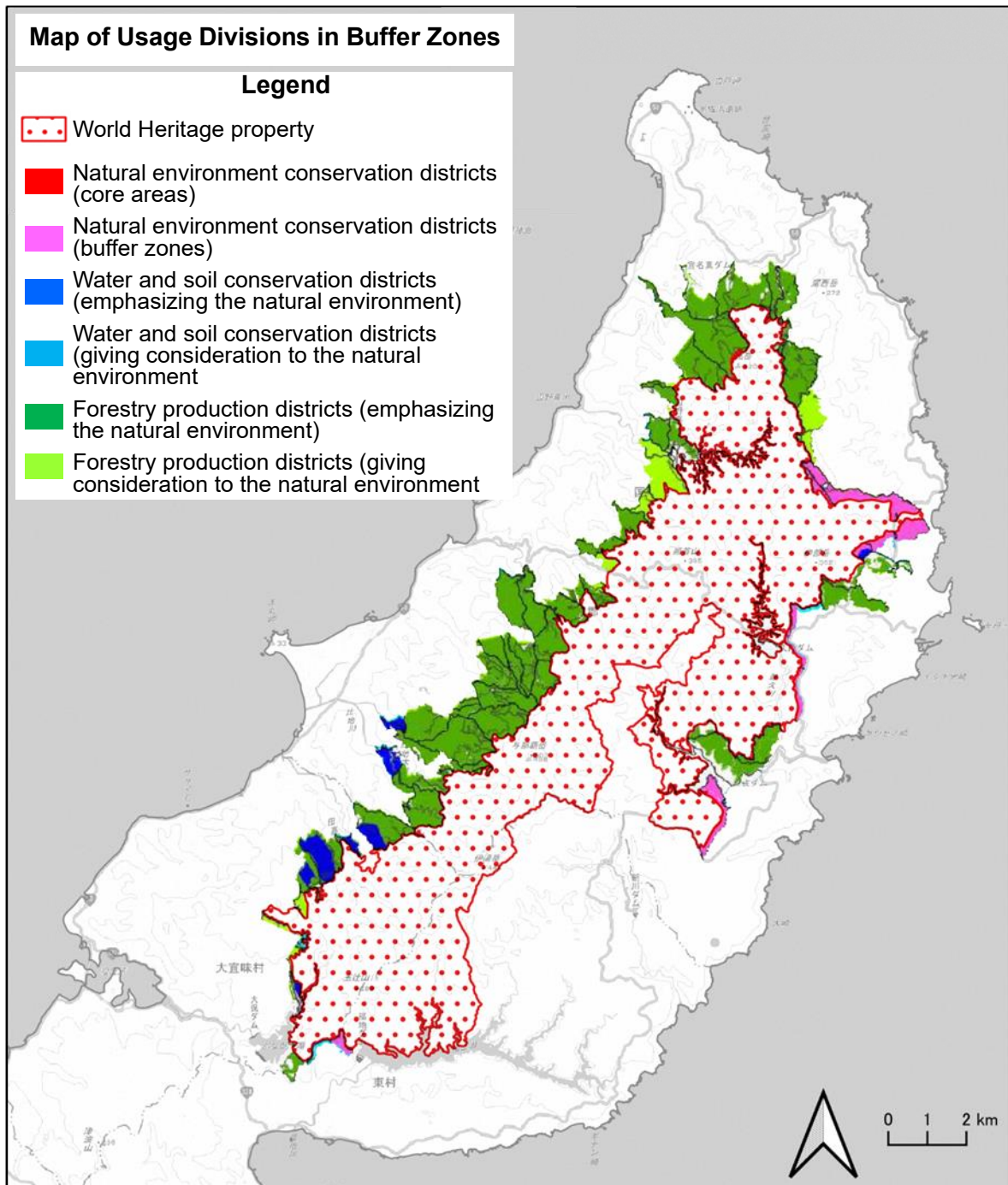
Usage divisions		Thinking behind the usage divisions
I. Natural Environment Conservation Districts		
World Heritage property	1) Core Areas	Districts with ecosystems that include highly endemic, rare wild creatures like the Okinawa woodpecker, Yambaru long-armed scarab beetle, Okinawa spiny rat, and other animals that only inhabit the primeval natural forest within the forests of Yambaru 【areas where primeval natural forests will be maintained and passed down (core areas)】 .
	2) Buffer Zones	Districts corresponding to core areas as buffer zones with the goals of linking core areas with other districts and stably maintaining the core areas 【areas for ensuring the continuity and buffer-like characteristics of the natural environment conservation districts (buffer zones)】 .
II. Water and Soil Conservation Districts		
Buffer zones	3) Emphasizing the Natural Environment	Water source forest districts where dams and rivers will be maintained with the goal of stably providing the water that underpins the prefectural residents’ lifestyles and industry 【areas where the emphasis is on the high-level expression of water and soil conservation functions, such as water source protection and the prevention of mountain disasters, etc.】 . These areas also put emphasis on conservation of natural environment.
	4) Giving Consideration to the Natural Environment	Water source forest districts where dams and rivers will be maintained with the goal of stably providing the water that underpins the prefectural residents’ lifestyles and industry 【areas where the emphasis is on the high-level expression of water and soil conservation functions, such as water source protection and the prevention of mountain disasters, etc.】 . These areas also include some consideration to conservation of natural environment.
III. Forestry Production Districts		
Buffer zones	5) Emphasizing the Natural Environment	Districts in regions where the objective is forestry production where more environmentally friendly management is to be carried out by emphasizing the conservation of the natural environment because they adjoin natural environment conservation districts and water and soil conservation districts 【areas where forestry production that emphasizes conservation of the natural environment is carried out】 .
	6) Giving Consideration to the Natural Environment	Districts in regions where the objective is forestry production where logging areas are decentralized (made non-continuous), where efforts for conservation are made for the forest zones along ridges and the understory vegetation in valleys, and where management that is friendly to the natural environment is carried out while supplying lumber products in a stable manner 【areas where forestry production that is friendly to the natural environment is carried out】 .
IV. Forest Usage Districts		
	7) Forest Usage Districts	Districts where the forests are used as tools to create new industries (tourism industry) by those engaged in the forestry industry and local residents, to serve as districts for deploying activities to experience nature 【areas where activities to experience nature by using forests while taking the natural environment into consideration are carried out】 .

For the time being, some parts of the forestry production districts, and water and soil conservation districts (backbone mountain range areas and area surrounding Mt. Nishimedake) will be classified as “Districts requiring coordination,” which require coordination between the conservation and use of the natural environment. This will be done in the interest of conserving biodiversity and securing continuity between environmental conservation

districts, as well as from the perspective of maintaining forest functions and conserving forests. Consideration will continue to be held between the concerned parties.

Furthermore, national forests will be managed based on the Regional Administration and Management Plan for Northern Okinawa, which was enacted by the national government (Forestry Agency). Part of the northern training ground, which was returned to Japan in 2016, was designated as a forest ecosystem reserve in December 2017.

As for prefectural forests, roughly 90% of these are national forests furnished with grant aid, and so therefore additional coordination with the national government will be needed for establishing the conservation and usage divisions.



*This figure overlays the World Natural Heritage Property, Buffer Zone, and Zoning under the Policy for the Promotion of the Yambaru Model Forestry (Measures and Policies).

b) Policies for Forest Management and Forest Development

Efforts will be made to improve forest management and forest development according to the usage divisions based on continuity with the environmental conservation initiatives taken to date in order to further improve environmental conservation measures and mitigate environmental impacts.

- Basic Policies for Forest Management and Management Policies for Each Usage

Division

Usage Divisions	Definitions / Basic Policies / Management Policies
I. Natural Environment Conservation Districts	[Definition] Areas Where Emphasis Is on Conservation of Primeval Natural Forests
1) Core Areas	[Basic Policy] Perform no forest management to maintain and pass down primeval natural forests. [Management Policy] <ul style="list-style-type: none"> • Perform no harvest management, clearing management, or road system installation.
2) Buffer Zones	[Basic Policy] Perform the bare minimum forest management, while maintaining primeval natural forests. [Management Policy] <ul style="list-style-type: none"> • Perform long rotation forest management, selective cutting of individual trees, and multi-storied forest management based on the power of nature.
II. Water and Soil Conservation Districts	[Definition] Areas Where the Emphasis Is on High-Level Realization of Water and Soil Conservation Function such as Water Source Protection and the Prevention of Mountain Disasters
3) Emphasizing the Natural Environment	[Basic Policy] Basically carry out forest management to enhance water and soil conservation function. [Management Policy] <ul style="list-style-type: none"> • Basically, perform long rotation forest management as well as selective cutting for multi-storied or single-storied forest management. • When there is no impact on water and soil conservation function, perform clear-cutting of a area smaller than 1 ha.
4) Giving Consideration to the Natural Environment	[Basic Policy] Basically carry out forest management to enhance water and soil conservation function. [Management Policy] <ul style="list-style-type: none"> • Basically, perform long rotation forest management and make efforts to perform selective cutting for multi-storied or single-storied forest management. • When there is no impact on water and soil conservation function, make efforts to perform clear-cutting of a area smaller than 1 ha.
III. Forestry Production Districts	[Definition] Areas Where the Emphasis Is on the Production of Lumber and Other Products, Aiming at Sustainable Forestry Production
5) Emphasizing the Natural Environment	[Basic Policy] Conserve and Create the Diverse Forest Environment Through Forest Management That Emphasizes Conservation of Natural Environments. [Management Policy] <ul style="list-style-type: none"> • Perform long rotation and/or standard forest management in large part. Extend the period as much as possible to minimize impact to the environment. • In the case of clear cutting, ensure to abide by the management regulations that are based on relevant laws and regulations and perform single-storied or multi-storied forest management on a single area less than 5 ha large in order to reduce the operation area to the extent possible. • For selective cutting, perform multi-storied forest management as a general rule.

A large part of the buffer zone is the forestry production district (emphasizing the natural environment). The basic policies for forest management and management policies of each division are as follows:

Policies for Forest Management and Forest Development in Forestry Production Districts (Emphasizing the Natural Environment)

These districts are mainly engaged in forestry production while also maintaining contact with natural environment conservation districts and water and soil conservation districts, thus the districts are established with emphasis on the conservation of natural environments.

Harvest Management –Perform long rotation and/or standard rotation forest management for the most part. In some areas, perform short rotation forest management after examining the environmental characteristics.

- Perform clear cutting or selective cutting. In the case of clear cutting, ensure everyone involved abides by the management regulations that are based on relevant laws and regulations and perform the method on a single area less than 5 ha large in order to reduce the operation area to the extent that is possible. Same goes for selective cutting, requiring minimization of the operation areas as much as possible. (*1)

Clearing Management

- Regenerate via artificial clearing (germination, natural seeding according to the conditions)
- Perform single-storied or multi-storied forest management.
- Plant broad-leafed trees or evergreen trees (Okinawa pine, etc.)

Road System Installation

- Use the existing road system, install a bare minimum road system necessary (service roads etc.) by taking the environment into consideration

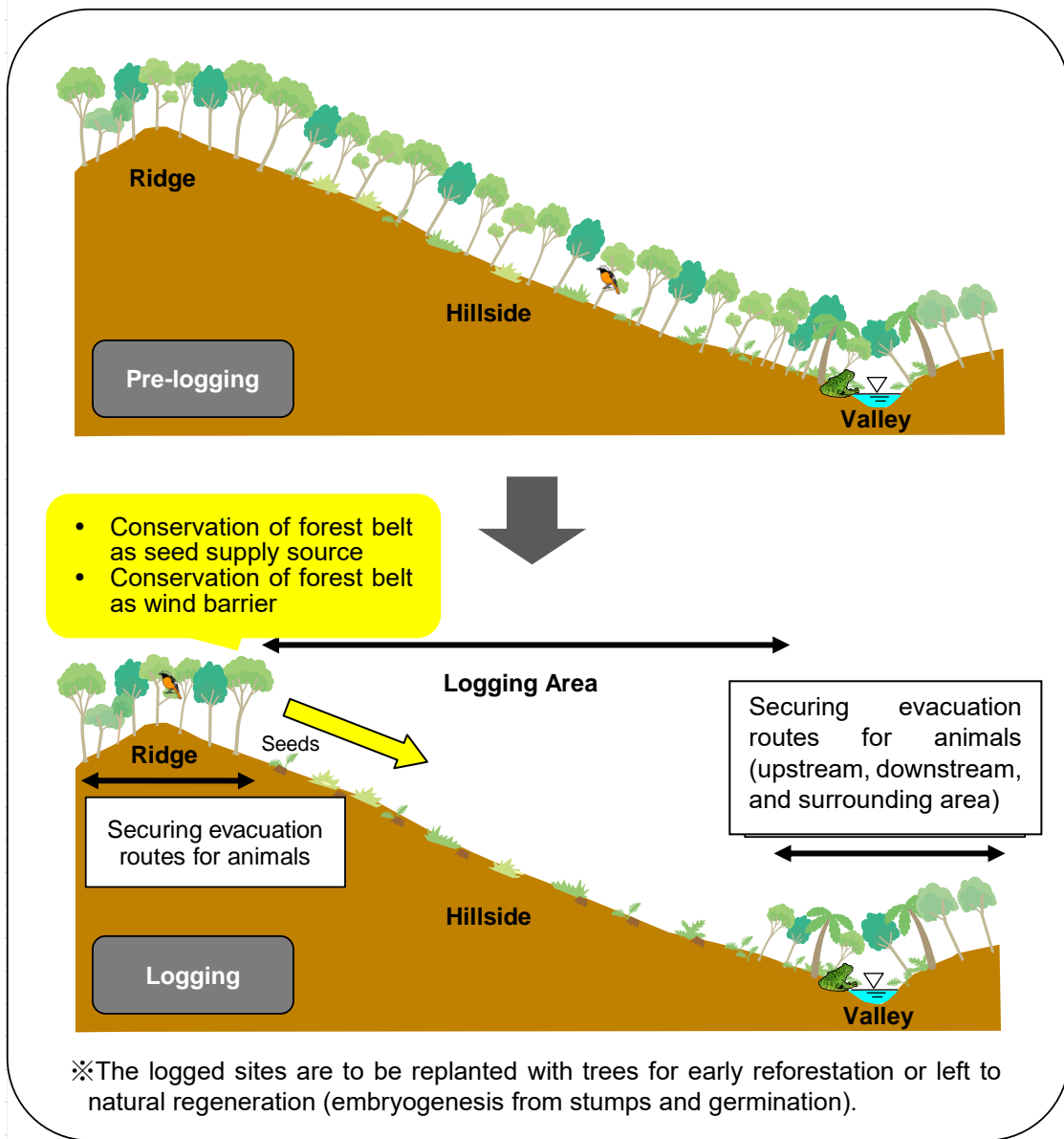
Environmental Conservation

- Any effort will be made to conserve the forest zone at the ridges in order to ensure security of evacuation routes for animals during logging, security of habitats during and after logging, natural restoration through natural regeneration (germination), and

mitigation of climate change within logging areas.

- Any effort will be made to conserve lower-elevation vegetation (such as underutilized small-diameter trees and ferns) in valleys in order to ensure security of evacuation routes (in upstream and downstream areas and the surrounding areas) for animals during logging, and security of habitats during and after logging.
- Efforts will be made to prevent logging during the breeding season (March–June) of wildlife such as the Okinawa woodpecker.
- Partially utilize underutilized land in order to minimize logging in natural forests.
- Plant at logging sites to accelerate forest growth.
- Promote long rotation forest management in an effort to mitigate environmental impacts and serve as buffer zones for natural environment conservation districts, while pushing for long-term use of habitats and nurseries for wildlife.

*1 The limitation of the size of one tree-cutting area to less than 5 ha had been applied before national park designation. This should now read as “2 ha in principle”, as the entire area in question has been designated as a Class II Special Zone of the national park.



Schematic Image of Logging Area where Forest Belts on the Ridge and Understory Vegetation in the Valley (Small-Diameter Trees that Are not Used and Ferns)

Policies for Forest Management and Forest Development in Forestry Production Districts (Emphasizing the Natural Environment)

These districts are primarily engaged through forestry production while still giving consideration to the natural environment. Examples include decentralization of logging areas, establishment of buffers (protection zones) among logging areas, and conservation of forest zones at the ridges and lower-elevation vegetation in the valleys.

Harvest Management

- Standard rotation and/or short rotation forest management are the norm. In some areas, long rotation forest management is conducted after examining the environmental characteristics.
- Perform clear cutting or selective cutting. In the case of clear cutting, ensure everyone involved abides by the management regulations that are based on relevant laws and regulations and perform the method on a single area less than 5 ha large in order to reduce the operation area to the extent that is possible. The same is true for selective cutting, requiring as much minimization of the operation areas as possible. *2

Clearing Management

- Regenerate via artificial clearing (germination, natural seeding according to the conditions)
- Perform single-storied or multi-storied forest management.
- Plant broad-leafed trees or evergreen trees (Okinawa pine, etc.)
- Perform forest management that promotes the use of underutilized land.

Road System Installation

- Use the existing road system, install a bare minimum road system necessary (service roads etc.) by taking the environment into consideration.

Environmental Conservation

- Any effort will be made to conserve the forest zone at the ridges in order to ensure security of evacuation routes for animals during logging, security of habitats during and after logging, natural restoration through natural regeneration (germination), and mitigation of climate change within logging areas.
- Any effort will be made to conserve lower-elevation vegetation (such as underutilized small-diameter trees and ferns) in valleys in order to ensure security of evacuation routes (in upstream and downstream areas and the surrounding areas) for animals during logging, and security of habitats during and after logging.
- Efforts will be made to prevent logging during the breeding season (March–June) of wildlife such as the Okinawa woodpecker.
- Utilize underutilized land in order to minimize logging in natural forests.
- Plant at logging sites to accelerate forest growth.

- Promote long rotation forest management in an effort to mitigate environmental impacts and serve as buffer zones for natural environment conservation districts, while pushing for long-term use of habitats and nurseries for wildlife.

*2 In the forestry production districts (giving consideration to the natural environment) within the buffer zones, the size of one operation area is limited to 2 ha in principle in Class II Special Zone of National Park and it should be smaller than 5 ha and minimized to the extent possible in Class III Special Zone.