

National Forest in IBARAKI

Year 2020



Weeding chemical spraying by drone

[Sep 2019 at Hitachi City]

**IBARAKI District
Forest Office**

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Work Assist Suit



Chemical spraying by drone

Containerized seedling



Seedling handling

By using our field for various activities, we are contributing

Toward Innovative Forestry

Planting at harvesting timing

Productivities improvement



Log-cut optimization

Multi-purpose tractor

I General description of National Forest

□ Forest Area

Approximately 45,000 ha of National Forest areas are located in Ibaraki Prefecture (Contains three watersheds as Yamizo-Taga, Mito-Naka and Kasumigaura).

□ Features

Most of National forest areas are located in Northern part of Prefecture, and mainly consist of productive man-made forests of Sugi cedar (*Cryptomeria japonica*) and Hinoki cypress (*Chamaecyparis obtusa*), which are major log providers to the local industry.

□ Vegetation

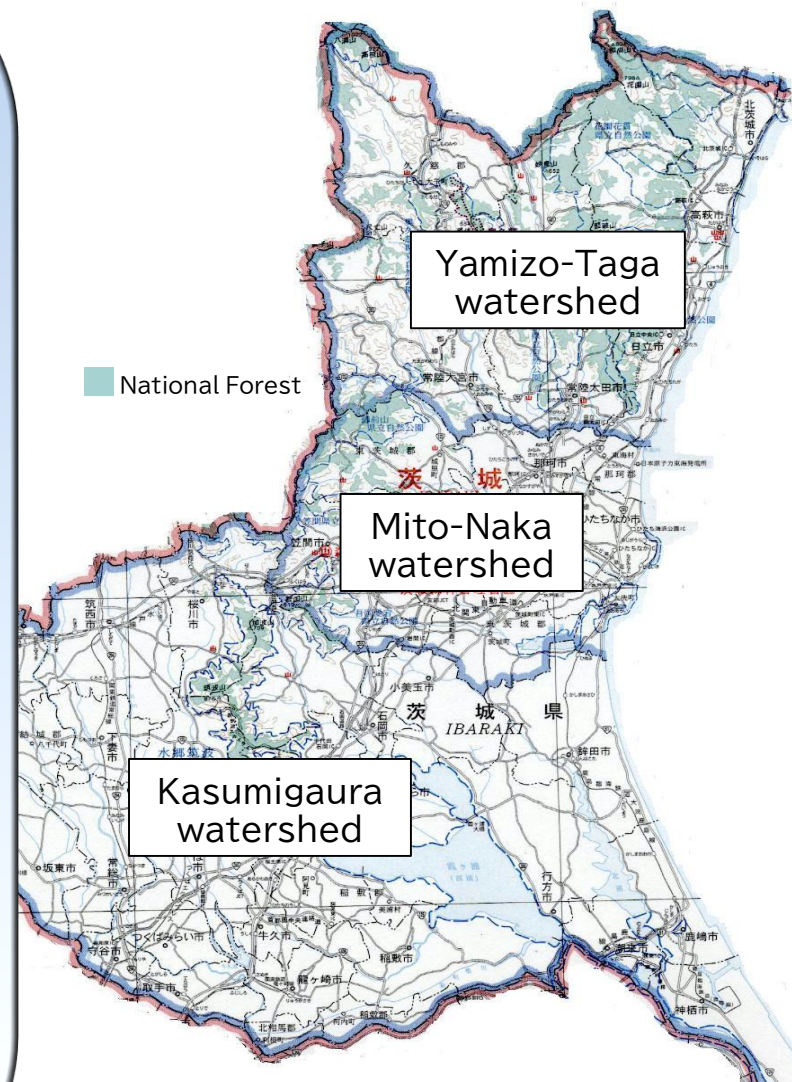
Natural vegetation covers are classified as warm-temperate zone - ever green forest, and Beech trees of cold temperate zone are mixed in high elevation area.

□ Contribution to public welfare

Soil conservation, water resource management and other forest functions of public welfare are strengthened.

□ Natural park

Natural park areas are designated in national forest area such as Suigo-Tsukuba quasi-national park, Okukuji, Hanazono, and Hananuki prefectural park.



Forest area in each watershed

II Location of National Forest

Approximately 80% of national forest areas are located at northern part (Yamizo–Taga watershed) of Ibaraki Prefecture

Forest area by watershed, and municipality

Watershed	Municipality	Total area (ha)	National Forest (ha)	Private Forest (ha)	Forest Total (ha)	Forest ratio (%)
Yamizo-Taga	Kita Ibaraki City	18,680	6,110	6,946	13,056	70
	Takahagi City	19,358	6,579	8,831	15,410	80
	Hitachi City	22,578	6,661	6,607	13,268	59
	Hitachi Ohta City	37,199	8,537	16,355	24,892	67
	Hitachi Ohmiya City	34,845	2,547	19,639	22,186	64
	Daigo Town	32,576	5,083	20,498	25,581	79
	Sub total	165,236	35,518	78,876	114,393	
Mito-Naka	Mito City	21,732	180	2,881	3,061	14
	Kasama City	24,040	1,426	9,246	10,671	44
	Hitachi Naka City	9,996	0	605	605	6
	Naka City	9,782	0	1,439	1,439	15
	Oharai Town	2,389	0	348	348	15
	Shirosato Town	16,180	3,948	5,844	9,791	61
	Tokai Village	3,800	0	439	439	12
	Sun total	87,919	5,554	20,801	26,355	
Kasumigaura	Tsuchiura City	11,362	38	1,177	1,215	11
	Ishioka City	21,333	1,655	6,132	7,787	37
	Tsukuba City	28,372	667	3,600	4,267	15
	Kasumigaura City	11,873	141	2,098	2,239	19
	Sakuragawa City	18,006	1,428	6,041	7,470	41
	Sub total	90,946	3,929	19,048	22,978	
Total		344,101	45,001	118,725	163,726	

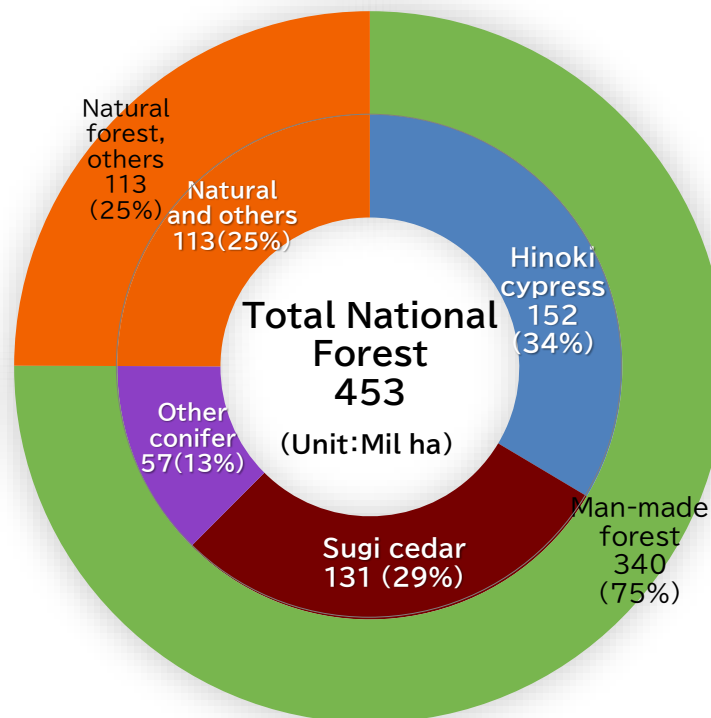
※Municipalities in which national forest located only.
 Data source: Forest Plan of District
 Areas may not added to total number due to rounding.

III Present state of national forest

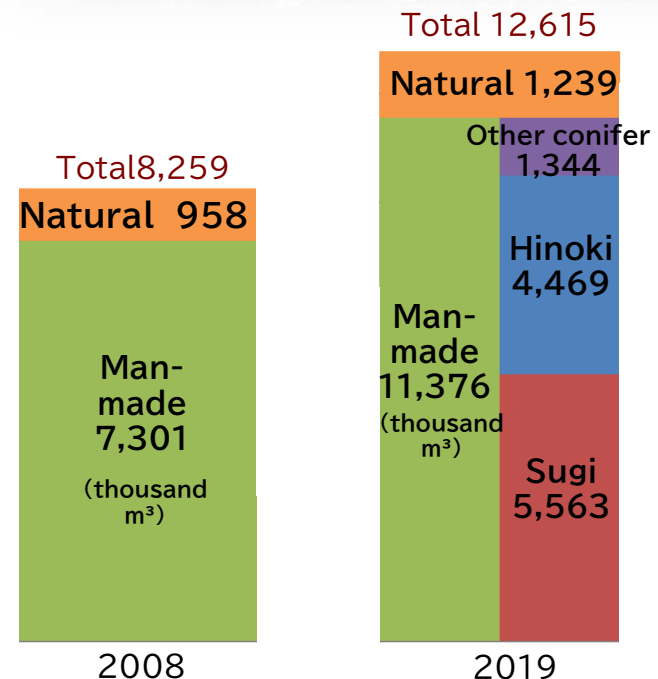
- Approximately 75% of national forest areas are classified as man-made forest.
- They are under the rapid growing stage, and total volume increased 50% in the last 10 years



■ Area by Man-made/Natural



■ Standing volume change



※Data: Forest inventory of national forest
Non tree areas are calculated as natural forest

※Data: District Forest Plan

Keys of Ibaraki DFO

Point 1 - Productivity

Stable log supply to the local industry by well-organized forest management

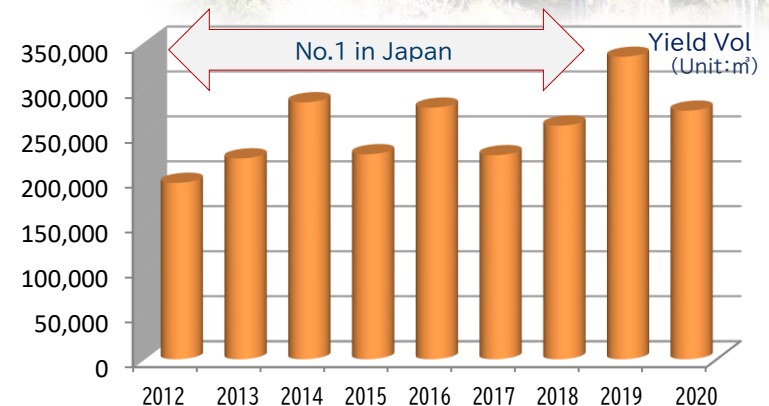
Small area (45,000 ha,
63th in 120 DFOs), but...
No.1 by logging volume

Why?

- High man-made forest ratio(appr.75%)
- Rapid growth (2.5 times of national average※2)
- High Road density (2.4times of national average※2)
- Skilled contractors (awarded company: Gold medalists - 3, Silver medalists - 2)
- Existing of harvest age profit sharing forest



※1 : 98 DFO, 14 Sub-DFO, 8 FMO
※2 : Comparison with national average of statistic book



Year	Field Vol	Remarks (unit:m³)
2012	196,074	National Forest Statistics
2013	223,254	"
2014	285,766	"
2015	227,912	"
2016	279,774	"
2017	226,859	"
2018	259,742	"
2019	336,393	Under the Aggregation
2020	276,377	Planned

Keys of Ibaraki DFO

Point -2 Advanced Tech

Many experience field of National Research Institutes nearby

Elite Tree, *Cunninghamia spp* plantation
(Hitachi City)



FFPRI
Forest Tree
Breeding Center
(Hitachi City)

Sugi 2nd Gen. test
forest (Shirosato Town)

Ibaraki DFO

Kanto Regional Forest Office
Forest Tech and
Encouragement Center
(Kasama City)

FFPRI-HQ
(Tsukuba City)



Growth of Elite Tree
(8m height in 5 years)

[Source : FFPRI-FTBC]

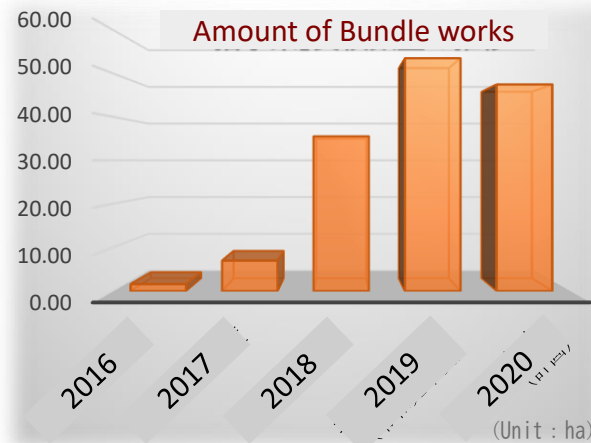
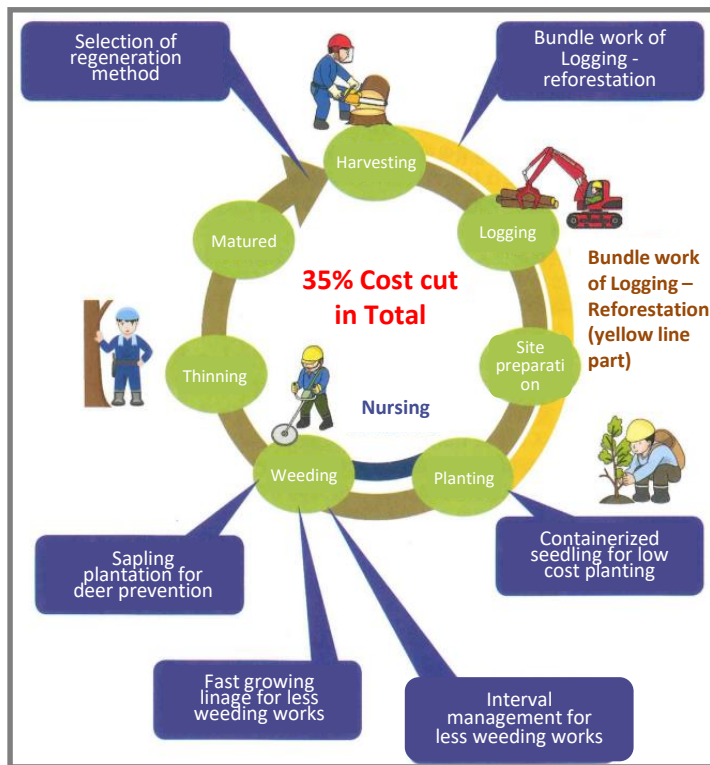


Keys of Ibaraki DFO

Point -3 Suitable for Field Level Demonstration

We provide many demonstration fields for newly developed technologies

Especially for low cost forest management



Advantage of Bundle Works

- Mobility and mechanical force of logging work is appropriated to regeneration works, such as site preparation and transportation of seedlings
- Seasonal mismatching is solved by containerized seedling system



Utilization of grapple machine to the site preparation work



Utilization of log transport machine to the seedling transportation work

IV ◆Topics◆ (Utilization of DFO's land)



DFO provided the filming location to NHK's historical drama-2020 "Awaiting Kirin"

V Field operations

As a **Forest of Nation**, we strengthen the function of our forest for Environmental service and Production service. We have two main pillars of field operation as follows,

1 Contribution to “the Forestry as A Growing Industry”

- Demonstration of the low cost operation such as bundling between logging and regeneration
- Dissemination of those systems to the private sector
- Forest manager development through the intensive contract for the newly introduced policy of “Forest Management Enforcement”

SFM Cycle of “Use – Plant – Maintain” for Renewable Natural Resources

2 Sustainable Forest Management

- Enforcing the Multi-function of forest
- SFM in a planned and effective way
- Resilience and healthiness such as preventing the pollen distribution



V Field Operations

1 Contribution to “Forestry as A Growing Industry”

1-a Demonstration of Low cost management system

- To organize the field seminars of logging and reforestation activities together with private contractors in order to improve the efficiency, safeties, and environmental impact of field works.
 - To promote cost-effective systems such as implementation of “Bundle work of Logging-Reforestation”, and the low cost logging by contract basis works as well.
 - To prepare against the invading of wild deer through the network construction among government agencies, field monitoring and scientific analysis.
- DFO organized the network of “Wild Deer Committee for Mt. Yamizo area National Forests”.



Seminar meeting for safety forest work



Field study of log-cut optimization



Wild Deer Committee for Mt. Yamizo area National Forests (at Shirakawa Sub DFO)

V Field Operations

1-b Road network development

- In addition to full spec forest road construction, DFO deploys low cost roads such as semi spec forest road and high spec logging road. Those flexible specifications contribute to the road network development with low cost, safety, and durability.
- DFO has constructed total 665 km of Forest Road and Semi Forest Road, and its density becomes 14 m/ha. (20 m/ha in case of including other road)



Tohbei-sawa Semi Forest Road, constructed in 2019 (Hitachi City)



Road network is indispensable for the cost effective forest management

※1 Semi Forest Road

Specification of forest road for middle size forest area. Durable road for 10 tons truck transportation

※2 High spec Logging Road

Specification of logging road for middle size logging area. Durable or tentative road for 2 tons truck transportation

V Field Operations

1-c Stable wood supply

- One of major mandate of DFO is “Stable wood supply” to the local industries, through the sustainable forest management.
- DFO logs and sells woods of approximately 85 thousand cubic meters per year, through the thinning works of man-made forest. 30% of logs are sold in log market, and rest of the pack are sold to demanders directly.
- DFO’s supply contributes to the development of various industries including Bio-mass energy.



Stable wood supply under the Forest Management Plan



Miyanosato Industrial Park
(Hitach Ohmiya City, Hitach Ohta City)

V Field Operations

1-d Private Forest – National Forest collaboration

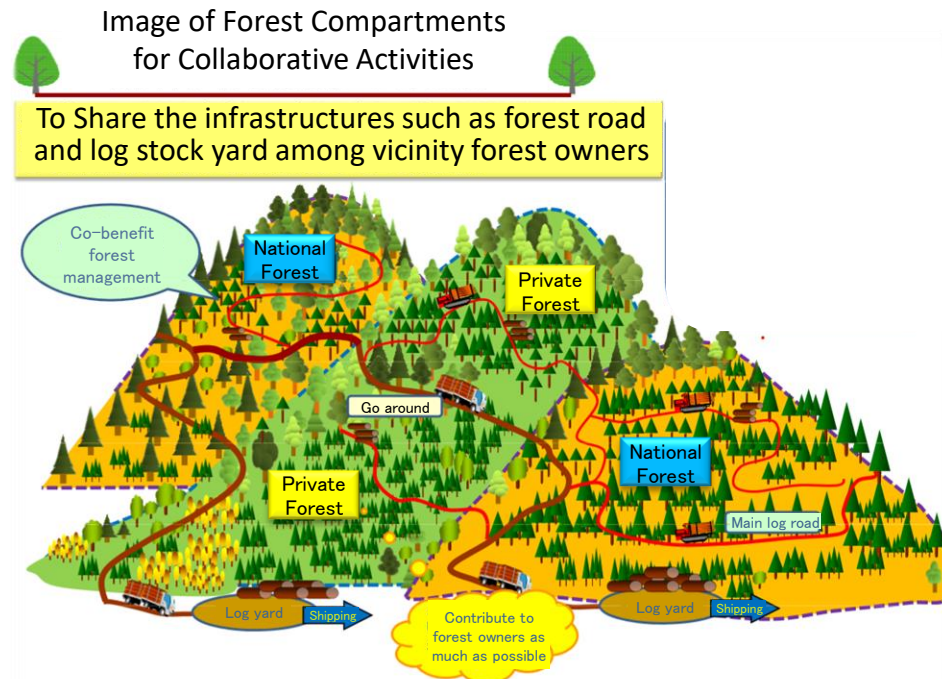
- “Forest Compartments for Collaborative Activities” will be designated for effective forest management
- “Agreement on the Elicitation of Forest’s Multi-Function” is under the discussion
- Shirosato town has been designated as the “Promotion Area of Private – National Collaboration on Forest Management Plan” in 2019
- “Ibaraki Foresters Council” was newly formed in June 2019 to encourage the communication between Foresters of DFO and Prefecture Government



Municipality Mayors' committee on National Forest



P-N Collaboration meeting
(Prefecture Gov. and DFO)



V Field Operations

2 Elicitation of forest's multi-function

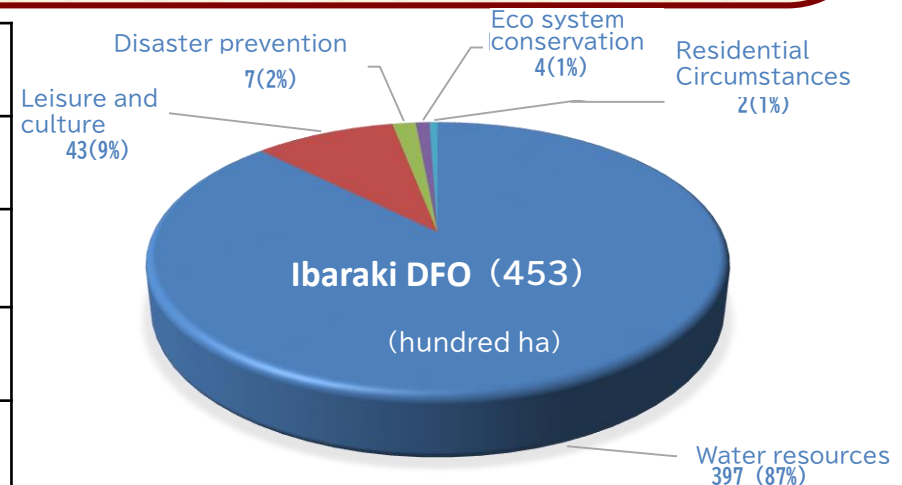
2-a Sustainable Forest Management

- Forest management under the 5-year management plan
- 5 categories of forest management types (as Table)
- Consensus building of forest management plan through the public hearing
- In 2021, the forest management plan in Kasumigaura watershed will be formed, and preparation works are implemented in 2020 through the open to the public procedures



Hearing meeting (Mito-Naka watershed FMP)

Forest Type	Function of Forest
Water resources	Provision of water resources
Leisure and culture	Provision of Leisure, study, sports, culture, sightseeing and other relative opportunities of forest use
Disaster prevention	Forming resilient national territory against natural disasters
Eco system conservation	Protection of virgin forest, rare species, and precious eco systems
Residential circumstances	Mitigation of noise, wind and other discomfort conditions



Data source: Forest operation plan

V Field Operations

2-b Low cost maintenance works

- Forest works are designated according to the Forest Management Direction* of each watershed
- Forest maintenance works such as replanting, nursing and thinning are implemented as a part of global warming prevention
- To introduce “Bundle-work of log and replant” in order to cut the cost

* 5-year plan of national forest management in each watershed area which is stipulated by Regional Forest Office



Replant

Applying the minimum number of seedlings in accordance with target forest type (2000 trees/ha for common forest)



Weeding

Applying the minimum number of weeding works under the scientific prognosis



Thinning

Applying the on-line cutting in order to secure the safeties and cost effectiveness

V Field Operations

2-c Soil conservation works

- Soil conservation works for prevent land disasters are implemented through the construction works, rehabilitation of degraded forest and proper forest management
- Prevention of log flow is one of hot issues under the climate change condition, and one of hopeful counter measures - slit dam was constructed in 2019

Aftermath of Typhoon 2019

Faxai (Sep)
DFO dispatched a drone team for the prompt survey to Chiba



Hagibis (Oct)
DFO area was heavily damaged, and rehabilitation works are underway



※DFO deployed the networking officers to the Prefectural and Municipal government

Check dam construction in 2019



Rehabilitation works at Sarugashiro (Kitaibaraki City)

V Field Operations

2-d Conservation forest

- More than 85% of DFO areas are designated as a conservation forest, such as for water resource conservation and disaster prevention, in accordance with Forest Law

(as for April 2018)

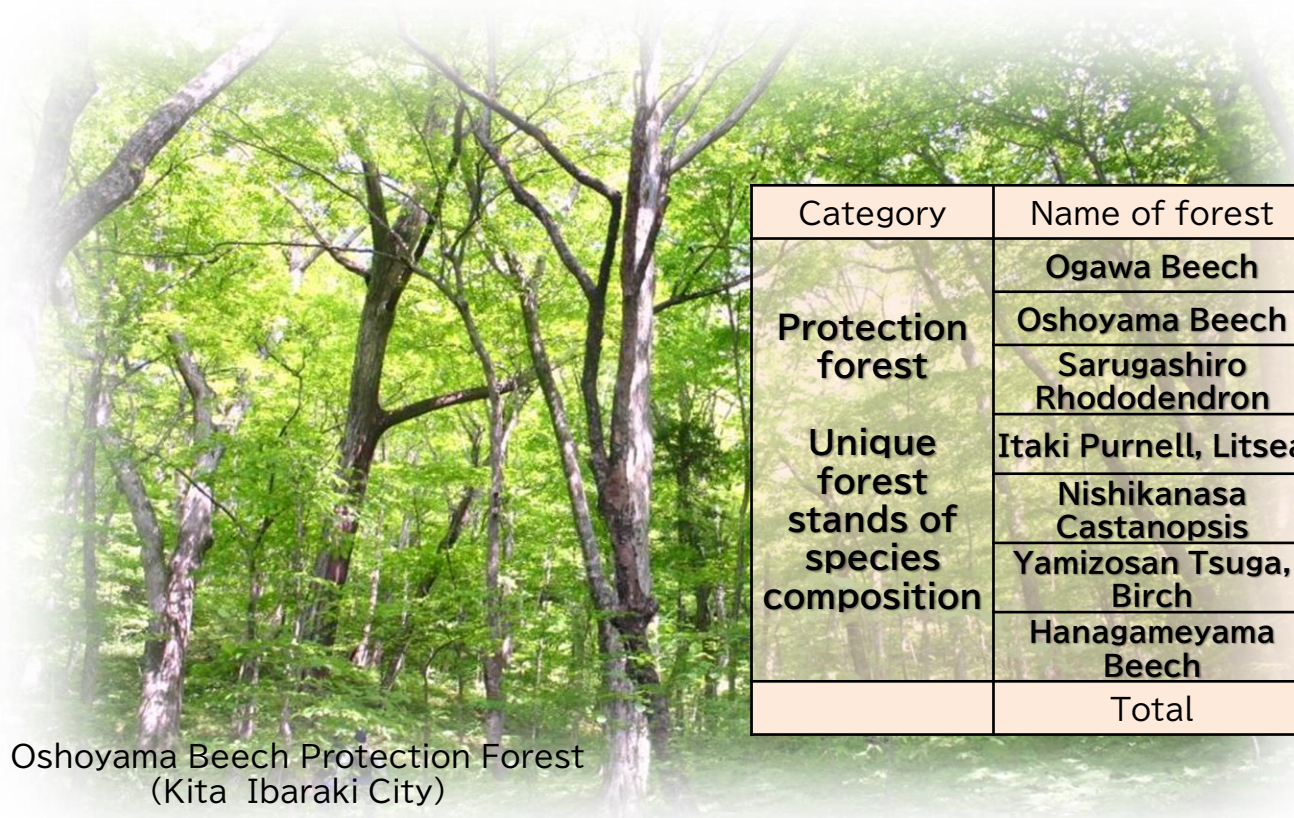
Area of conservation forest	Water resource conservation	Sediment flow prevention	Soil erosion prevention	Salty wind prevention		Total (ha)
	36,666	358	28	36		
	Draught mitigation	Land scape protection	Sport and health area reservation	Sandy wind	Aviation Target	38,689
	160	49	1,386	4	2	

※duplication included

V Field Operations

2-e Biodiversity Conservation

- 7 forest areas are designated as a Protection Forest for conserving the unique ecosystem such as beech forest in montane
- Protection Forests are reorganized in accordance with national level system reform in April 2018



Category	Name of forest	Area (ha)	Contents
Protection forest Unique forest stands of species composition	Ogawa Beech	103.51	Beech, Oak, Birch
	Oshoyama Beech	23.17	Beech, Oak
	Sarugashiro Rhododendron	28.40	Beech, Chestnuts, Oak, Rhododendron
	Itaki Purnell, Litsea	10.68	Oak, Pine, Purnell, Pine, Litsea
	Nishikanasa Castanopsis	14.39	Oak, Beech, Castanopsis
	Yamizosan Tsuga, Birch	29.49	Tsuga, Birch, Beech, Oak
	Hanagameyama Beech	11.93	Beech, Oak
	Total	221.57	

Oshoyama Beech Protection Forest
(Kita Ibaraki City)

V Field Operations

3 Forest management as “Forest of Nation”

3-a Recreational use of forest area



- In order to provide enjoyment opportunities, Recreation Forests are designated such as Natural Resort Forest with beautiful seasonal scene.
- In 2017, “Okukuji Recreation Forest” was selected as one of Japan’s 93 beautiful forests. DFO promoted sightseeing activities through the placement of signboard and etc.

Category	Destination forest	Education and culture	Forest sports	Nature scene	Recreation	Total
Number	1	2	2	5	1	11
Area(ha)	133	93	171	393	633	1,423



Uni-Voice narration service

Narrative information are available at the major sightseeing points, which are retrieved by Smartphone application. In Okukji, information is available by English, Chinese, Korean and Japanese as well.



Signboard of Uni-Voice

Uni-Voice is developed by JAVIS (Japan Association for the Visually-impaired Information Support), and available at App Store or Google Play Store



Celebration signboard of Emperor Accession (left), and visitor's map of Recreation Forest (right) at Okukuji (Daigo Town)


V Field Operations

3-b Dissemination and social action

DFO provides interactive opportunities to the school children and staff members of CSR forest partners, through the organization of Forest School and other events.



CSR forest (Maintenance)




CSR forest (Maintenance)



Social Contribution Forest



Memorial of Arbor day beginning place




Green Festival
茨城森林



CSR forest (Maintenance)



CSR forest (maintenance)



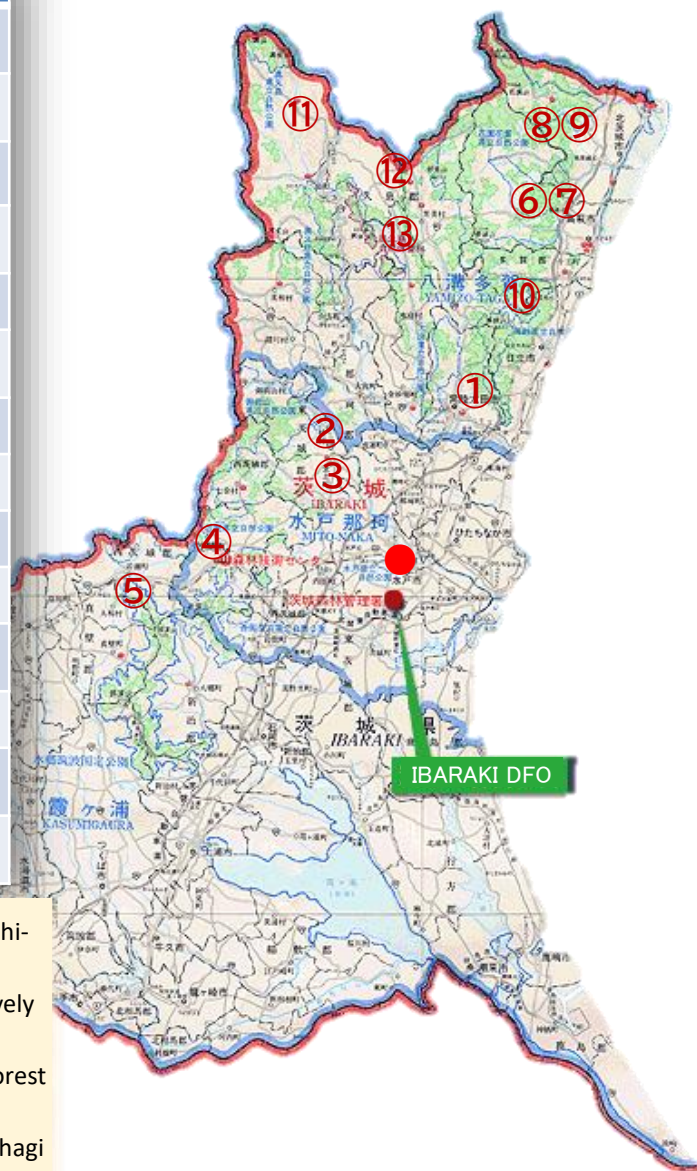
CSR forest (plantation)

VI Amount of field operations in 2020

Name		Amount	Remarks
Yielding Volume		276,377 m ³	
	Logging	96,499 m ³	Selling volume 85,000 m ³ (by Thinning work 470ha)
	Sold as standing trees	179,878 m ³	(by Clear cutting 280ha)
Site preparation		208 ha	Including Bundling work 54ha
Planting		208 ha	Including Bundling work 54ha (2,000 trees/ha)
Weeding		751 ha	
Climber removing		62 ha	
Improvement cutting		96 ha	
Improvement cutting II		139 ha	
Forest road construction		400 m	1 line (Kita Ibaraki City)
Soil conservation work		Check dam 1 unit	(Hitachi Ohta City)

VII Location map

No	Name	Address	Tel
DFO	Ibaraki District Forest Office	978-7 Kasahara-cho, Mito City, Ibaraki Pref.	+81-29-243-7211
1	Hata Ranger Office	1237-1 Yamashita-cho, HitachiOhta City	+81-294-72-0699
2	Takabu Ranger Office	182-1 Awasan, Shirosato Town	+81-29-289-4440
3	Ishiduka Ranger Office	1203-3 Ishiduka, Shirosato Town	+81-29-288-4116
4	Kasama Range Office	87-1 Kurusu, Kasama City	+81-296-72-0390
5	Makabe Ranger Office	409-2 Makabe, Makabe-cho, Sakuragawa City	+81-296-55-0220
6	Takahagi Ranger Office	3-10-1 Kasuga cho, Takahagi City	+81-293-22-3030
7	Kamikimita Ranger Office		+81-293-22-3031
8	Hanazono Ranger Office	2375-1 Matsui, Nakasato cho, Kitalbaraki City	+81-293-42-0256
9	Isohara Ranger Office		+81-293-42-0243
10	Juo Ranger Office	1994-1 Tomobe, Juo cho, Hitachi City	+81-294-39-2403
11	Daigo Ranger Office	533-1 Daigo, Daigo Town	+81-295-72-0611
12	Tokuda Ranger Office	356-3 Tokuda cho, HitachiOhta City	+81-294-82-2527
13	Orihashi Ranger Office	367 Kozuma Cho, HitachiOhta City	+81-294-82-2157



[History]

1883 Ibaraki Forest Area Office was started with Sukegawa, Shimotazuna, Omiya, Sugaya, Higashi-yamada, Iwama-simogou, Obara Sub Forest Area Office
 1884 Daigo station was set
 1886 Ibaraki office was moved to Tokyo, and Sugaya shifted to Mito, Obara to Kasama respectively
 1888 Daigo station was upgraded to Sub Forest Area Office
 1896 Shimotazuna office was renamed to Takahagi office
 1923 Forest Area Offices were restructured to Regional Forest Management Offices, and Sub Forest Area Offices to District Forest Management Offices respectively
 1999 Kasama DFMO was merged to Mito DFMO
 2003 Mito DFMO was restructured to Ibaraki District Forest Office, and Takahagi DFMO to Takahagi Office, Daigo DFMO to Daigo Office respectively
 2008 Takahagi and Daigo Offices were merged to Ibaraki DFO