



PERIODIC REVIEW FOR BIOSPHERE RESERVE

[January 2013]

INTRODUCTION

The UNESCO General Conference, at its 28th session, adopted Resolution 28 C/2.4 on the Statutory Framework of the World Network of Biosphere Reserves. This text defines in particular the criteria for an area to be qualified for designation as a biosphere reserve (Article 4). In addition, Article 9 foresees a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the secretariat by the State concerned. The text of the Statutory Framework is given in the third annex.

The form which follows is provided to help States to prepare their national reports in accordance with Article 9 and to update the data available to the Secretariat on the biosphere reserve concerned. This report should enable the International Coordinating Council (ICC) of the MAB Programme to review how each biosphere reserve is fulfilling the criteria of Article 4 of the Statutory Framework and in particular the three functions. It should be noted that it is requested, in the last part of the form (Criteria and Progress Made), to indicate how the biosphere reserve fulfills each of these criteria.

The information presented on this periodic review will be used in a number of ways by UNESCO:

- (a) for examination of the biosphere reserve by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;
- (b) for use in a world-wide accessible information system, notably for the UNESCO-MABnet and publications, facilitating communication and interaction amongst persons interested in biosphere reserves throughout the world.

Kindly indicate if any part of this report should remain confidential.

The form consists of three parts:

- Part one is a summary highlighting the main changes in the biosphere reserve during the reporting period.
- Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects.
- Part three consists of two Annexes (A): the first Annex (A.1) will be used to update the directory of biosphere reserves on the MABnet. The second annex will be used to provide promotion and communication materials of the biosphere reserve (A.2).

The third annex comprises the Statutory Framework for the World Network of Biosphere Reserves.

Please provide as many quantitative data as possible as well as supporting documentation to complete the information provided, especially:

- Map(s) clearly showing the zonation (see in particular 2.3.1);
- The legal texts for the different zones.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO.
2. An electronic version (on diskette, CD, etc.) of the periodic review form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

UNESCO
Division of Ecological and Earth Sciences 7,
Place de Fontenoy
F-75732 Paris 07 SP, France Tel:
+33 (0)1 45 68 40 67
Fax: +33 (0)1 45 68 58 04
E-mail: mab@unesco.org
www.unesco.org/mab

TABLE OF CONTENT

PART I: SUMMARY

PART II: PERIODIC REVIEW REPORT

1.	Biosphere Reserve	6
2.	Significant Changes in the Biosphere Reserve During the Past Ten Years	7
3.	Ecosystem Services	12
4.	The Conservation Function	12
5.	The Development Function	13
6.	The Logistic Function	15
7.	Governance, Biosphere Reserve Management and Coordination	18
8.	Criteria and Progress made	22
9.	Supporting Documents	26
10.	Addresses	27
Annexes		
	Annex I: MABnet Directory of the Biosphere Reserves	29
	Annex II: Promotion and Communication Materials	31
	Annex III: Statutory Framework of the World Network of Biosphere Reserves	34

PART I: SUMMARY

a) Name of the biosphere reserve:

Tadami Biosphere Reserve: Tadami BR

b) Country:

Japan

c) Year of designation:

June 12, 2014

d) Year(s) of periodic review(s):

2024 (This is first 10 years periodic review)

e) Previous recommendation(s) made by the International Co-ordinating Council (MAB- ICC), if applicable:

N/A

f) What follow-up actions are completed and if not completed/initiated, please provide justifications.

N/A

g) Update on the implementation of measures to achieve the objectives of the biosphere reserve.

With regard to governance, in July 2014 immediately after the designation of the Tadami BR, the “Tadami Biosphere Reserve Governance Board,” consisting of organisations related to the Tadami BR, was established as the highest decision-making body for the management and operation of the Tadami BR. In addition, as an advisory body to the Tadami Biosphere Reserve Governance Board, the “Tadami Biosphere Reserve Contributing Board,” consisting of experts from various fields was established. In 2015, the Tadami Biosphere Reserve Governance board formulated the Tadami Biosphere Reserve Management Plan, which sets forth guidelines for the management and operation of the Tadami BR. It was decided that each member organisation of the Governance Board should formulate action plans based on this Management Plan.

Based on the Management Plan and action plans, projects related to Biosphere Reserve have been implemented in accordance with the three functions of the BR. The main projects are as follows.

[Projects related to conservation function]

- Tadami Town enacted the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” in 2016 to understand the importance of protecting wildlife and conserving its habitats in the town, as valuable wildlife was being lost in the Tadami Biosphere Reserve area due to illegal theft or capture or development activities. In particular, penal provisions have been established for capturing of insects in large numbers using light traps. The Ordinance specifies species that should be protected, and the town commissioned town residents to be observers to implement activities to protect them. As a result, illegal capture has decreased, and there is a growing momentum for wildlife conservation.

[Projects related to logistic support function]

- Tadami Town has established a subsidy project to provide funding, cooperation and support for academic investigation research to scientifically elucidate the protection and conservation of the natural environment and wildlife in the Tadami BR area, the sustainable utilisation of natural resources by the residents, and the value of traditional lifestyles and culture that rely on such resources. To date, subsidies have been granted for a total of 62 research themes, and many academic results have been obtained. The results of the research are given back every year in presentations for town residents and others, and are also published in the Tadami Beech Center's BULLETIN.
- Tadami Town set up a budget for the basic research on natural environment and social culture to investigate unexplained natural environment and culture in the Tadami BR, and actively attempted to elucidate them.
- While the Tadami Beech Center, which is the core organisation of the projects to promote the Tadami BR in Tadami, has introduced and exhibited the natural environment and wildlife in Tadami and their relationship with people through its attached museum, the “Tadami Beech and River Museum,” the “Tagokura Heritage Center” was newly opened to introduce the nature, and traditional lifestyles and culture of the former Tagokura settlement, which became submerged and disappeared due to the construction of the Tagokura Dam, and the history of the dam construction. The Heritage Center also houses the secretariat of the Tadami Biosphere Reserve Governance Board, and serves as a hub for BR activities. Furthermore, the Education Board of Tadami Town opened the “Tadami Museum of Folklore and History” which houses and exhibits folk implements designated as National Important Cultural Properties.
- All elementary and junior high schools in the Tadami Biosphere Reserve area have joined the UNESCO ASPnet, and are also working to realise the SDGs through “Tadami Study” (local learning) utilising museum facilities and outdoor fields in Tadami town, and ESD that encourages the students to think about the relationship between the mountains and the sea, and the plastic issues.

[Projects related to development function]

- A project for branding “traditional products of ‘Tadami, the Capital of Mother Nature’,” which are local brand products using natural resources, agricultural products and traditional techniques in the Tadami Biosphere Reserve, has been carried out to promote initiatives to inherit and develop the traditional lifestyles and culture that have utilised local resources in sustainable ways, and to contribute to economic activities. As a result, 36

products were developed, including products that revived traditional culture and new products that had never existed before.

- The Tadami region is situated deep in the mountains, and the natural beech forests, which represent the natural forests in the Tadami region, are not easily accessible. Therefore, natural and secondary forests with a relatively high degree of naturalness around the settlements have been designated as “Tadami Observation Forests” and maintained with the cooperation of local residents to utilise them as opportunities to experience, observe and educate about the natural environment and wildlife in the Tadami region. Currently, nine locations have been designated as Tadami Observation Forests.
- In order to promote eco-tourism and green tourism in the Tadami region, Tadami Town has been working on a project to train nature guides. Since the BR registration, the town has been recruiting nature guides and improving their quality through Beech Center lectures held by the Tadami Beech Center and training programs outside the town.

h) Briefly describe the process by which the current periodic review has been conducted:

The Tadami Biosphere Reserve Governance Board, which is the management and operation organisation of the Tadami BR, summarised and evaluated the contents of implementation, the degree of achievement, and the results of each project undertaken to realise the principles and objectives of the BR based on the developed management and operation, and action plans, and compiled them into a preliminary draft of a periodic review report, led by the Secretariat of the Governance Board. The Secretariat of the Governance Board proposed the preliminary draft to the members of the Governance Board and the Tadami Biosphere Reserve Contributing Board, which is an advisory body to the Governance Board consisting of experts in various academic fields, to seek comments from them. The Secretariat also prepared a “draft periodic review report” based on the public comments from the residents within the Tadami BR, submitted it to the Tadami Biosphere Reserve Governance Board, and after the approval from the Board, completed the draft report as a periodic review report.

i) Area and spatial configuration:

	Previous report (nomination form or periodic review) and date	Proposed changes (if any)
Area of terrestrial Core Area(s)	3,557 ha (Tadami BR nomination form, 12 June, 2014)	-
Area of terrestrial Buffer Zone(s)	51,315 ha (Tadami BR nomination form, 12 June, 2014)	51,434ha (Δ119ha)
Area of terrestrial Transition Area(s)	23,142 ha (Tadami BR nomination form, 12 June, 2014)	23,023ha (▼119ha)
Area of marine Core Area(s)	-	-
Area of marine Buffer Zone(s)	-	-
Size of marine Transition Area(s)	-	-

- Reason for changes in areas: In 2021, following the review of the Echigosanzan-Tadami Quasi-national Park in accordance with the Natural Park Act, the “Mt. Gamoudake area” (119 ha in the transition area) located in the northern part of the Tadami BR was designated as a special zone of the park, resulting in an increase of 119 ha in the buffer zone.

j) Human population of the biosphere reserve:

	Previous report (nomination form or periodic review) and date	At present (please state date of census or other source)
Core Area(s) (permanent and seasonally)	0	0
Buffer Zone(s) (permanent and seasonally)	0	0
Transition Area(s) (permanent and seasonally)	4,695 (Tadami BR nomination form, 1 May, 2013)	3,750 (April 2023)

k) Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned.

Budget in the previous report (nomination form or periodic review) and date	Current budget
Annual total: 25,000,000-50,000,000 yen Financial resources: Tadami Town (Tadami BR nomination form, 12 June, 2014)	Annual total: 11,330,000 yen Financial resources: Tadami Town and others (For details, refer to 2.3.2.)

l) International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

At the national level, the Tadami BR participates in the Japanese Biosphere Reserves Network (JBRN) to provide and share information and exchange opinions on BR's various activities. Internationally, the Tadami BR made a presentation titled "Protecting and harnessing the lifestyles, culture and nature of snow country: Tadami Biosphere Reserve" (presented by a representative of JBRN on behalf of the Tadami BR) at the 4th World Congress of Biosphere Reserves held in Lima in 2016.

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

Tadami Biosphere Reserve: Tadami BR (Photo 1-1; Figure 1-1, 1-2)

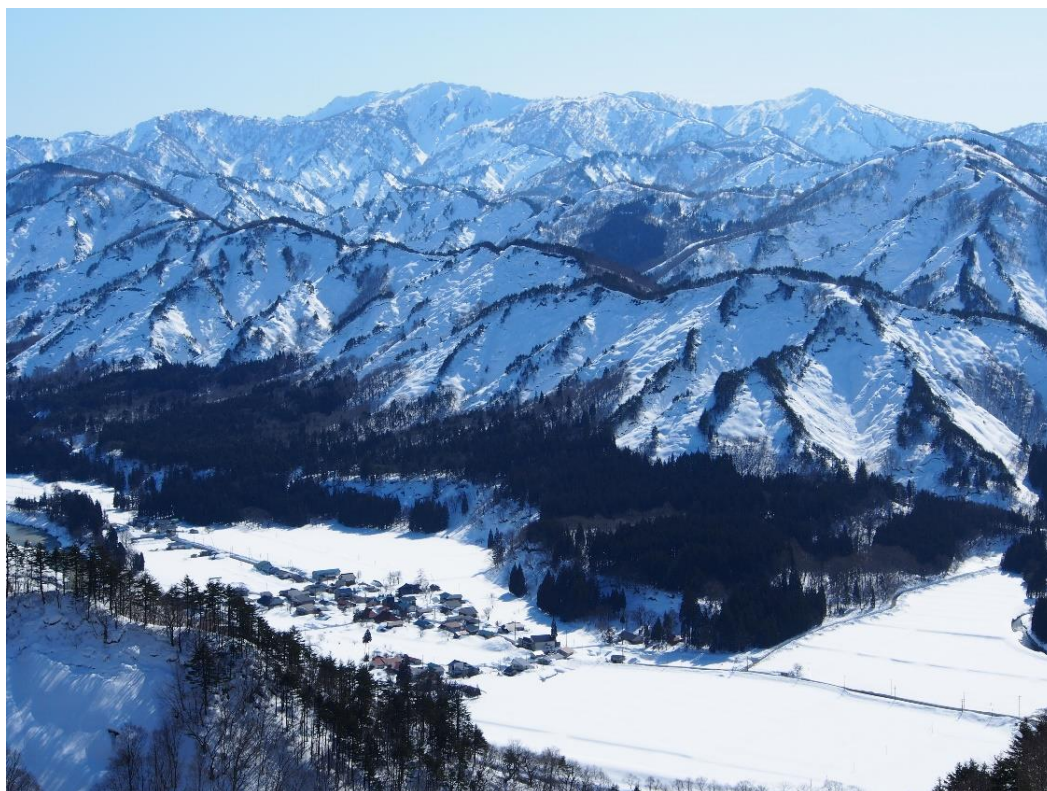


Photo 1-1 Within Tadami BR in winter. Deep mountains of the protected area (core area and buffer zone) (photo) and a settlement in the transition area (front side in the photo)

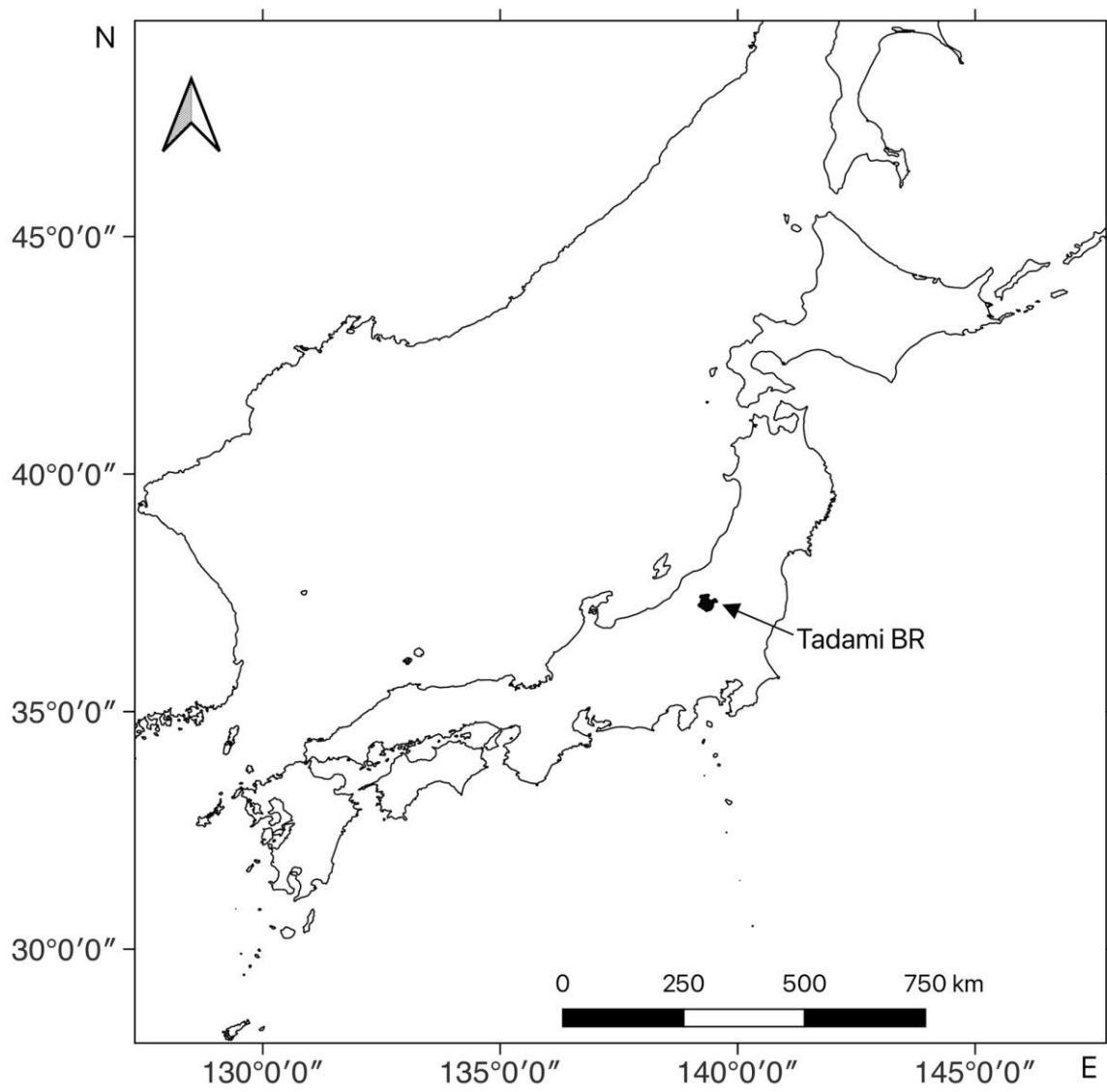


Figure 1-1 Location map of Tadami BR

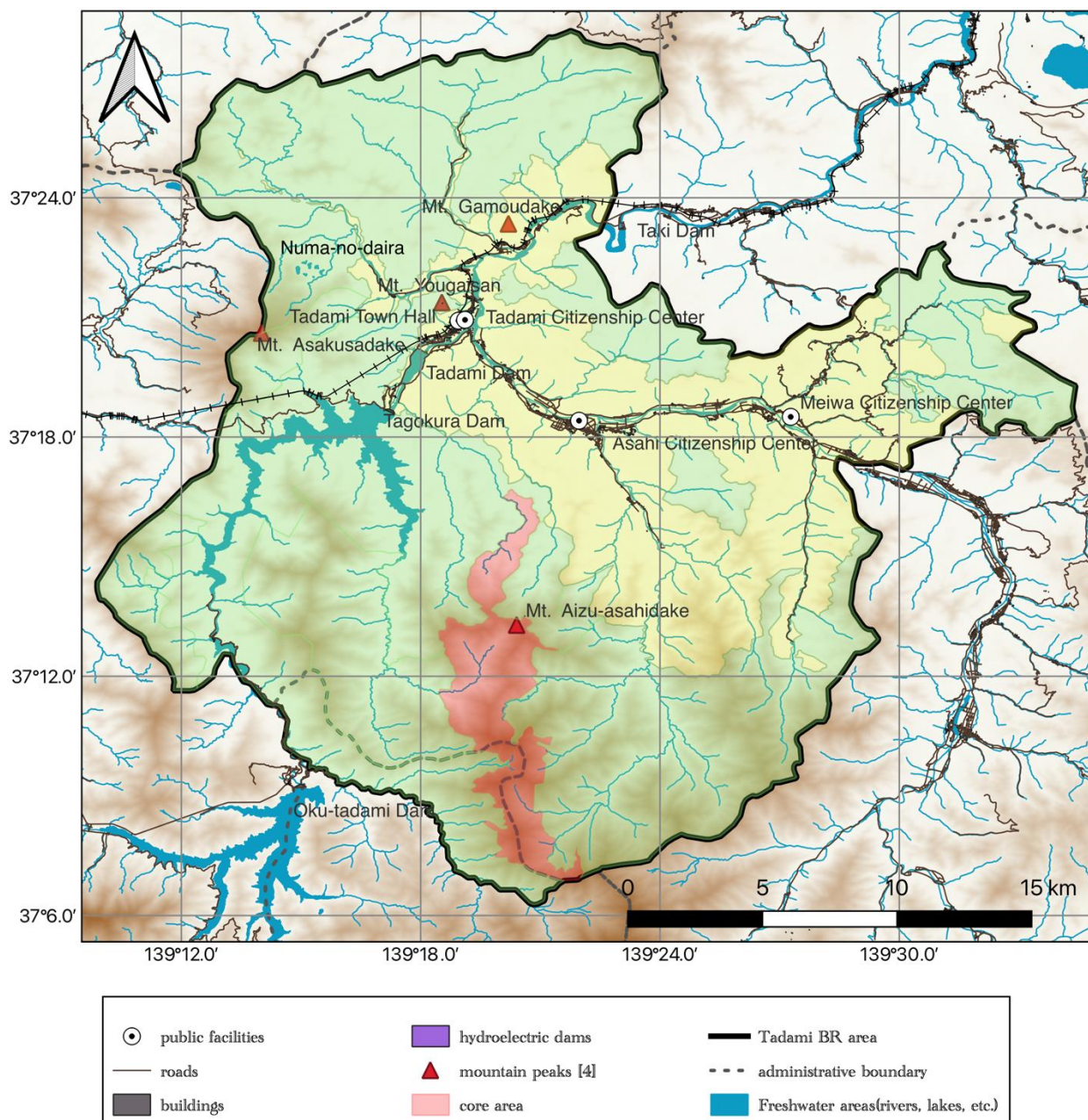


Figure 1-2 General view of Tadami BR

The geographic information on freshwater areas, roads, railways, dams, public facilities, buildings on the map was edited and drawn from OpenStreetMap data

(<https://download.geofabrik.de/asia/japan.html>), and the topographical relief from ASTER global 3D topographic data (ASTER Global Digital Elevation Model Version 3: ASTGTM,

<https://doi.org/10.5067/ASTER/ASTGTM.003>), using free GIS software, QGIS (<https://qgis.org/ja/site/>).

1.1 Year designated:

12 June, 2014

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate):

Current-2024 is the first 10 years periodic review.

1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

N/A

1.4 Other observations or comments on the above.

N/A

1.5 Describe in detail the process by which the current periodic review has been conducted:

The Tadami Biosphere Reserve Governance Board has been aware that a periodic review report will be conducted 10 years after the registration of the Tadami BR. Therefore, immediately after the registration, the Board has developed a plan for the management and operation of the Tadami BR and has been taking actions to realise the principles and objectives of BR. Meetings of the Tadami Biosphere Reserve Governance Board has been annually held to report on the annual planning and implementation of activities by its members, and to share and improve issues. The periodic review report to be submitted to UNESCO for the first time is positioned as a summary of these activities.

The preparation work for this periodic survey was carried out in the area where the population aging rate is high and the medical care system is weak under the influence of COVID-19. Therefore, it was difficult to conduct in-depth face-to-face discussions and reviews, and the survey had to be conducted mainly through remote meetings and in writing.

In preparing the periodic review report, the Tadami Biosphere Reserve Governance Board first established a process for the preparation. The Tadami Biosphere Reserve Governance Board established a study team led by the secretariat for the study of the periodic review, and from the end of 2022, the study team conducted hearing investigations and document researches such as written inquiries and interviews on the activities of the governance board members related to the BR after the BR registration. The periodic review study team compiled the survey results and prepared a preliminary draft of the periodic review report in April 2023. After the review of the preliminary draft of the periodic review report by the members of the Tadami Biosphere Reserve Governance Board and the Tadami Biosphere Reserve Contributing Board, which is an advisory body to the Governance Board consisting of experts in various academic fields, and after seeking public comments from the residents of the Tadami BR area and stakeholders, a draft of the periodic review report was prepared. The final draft of the periodic review report was submitted at the meeting of the Tadami Biosphere Reserve Governance Board, and after review, the final periodic review report was approved in September 2023.

Table 1-1 Timeline of Tadami BR periodic review report implementation process

Year	Month	Periodic review study team (Secretariat of Tadami Biosphere Reserve Governance Board)	Tadami BR Governance Board	Tadami Biosphere Reserve Contributing Board
2022	9	Information collection		
	10			
	11			
	12	Inquiries (in writing) to ask opinions and hearings with the governance board members		
2023	1	Preparation of preliminary draft		
	2			
	3			
	4		Presentation of preliminary draft of periodic review report, and inquiries to ask opinions	Presentation of preliminary draft of periodic review report, and inquiries to ask opinions Meeting
	5			
	6	Soliciting public comments		
	7		Presentation of preliminary draft of periodic review report, and inquiries to ask opinions	
	8			
	9		Approval of final draft Submission of periodic review report to the Secretariat of Japanese National Commission for UNESCO (Office of the Director-General for International Affairs, the Ministry of Education, Culture, Sports, Science and Technology)	
	10			
	11			
	12			

1.5.1 Which stakeholders were involved?

Tadami Biosphere Reserve Governance Board:

The highest decision-making body for the management and operation of the Tadami BR, consisting of 24 bodies and organisations related to the Tadami BR (currently 23 members due to the dissolution of one organisation). For details of the members, refer to 7.2.

Tadami Biosphere Reserve Contributing Board:

An advisory body to the Tadami Biosphere Reserve Governance Board, consisting of 17 members, who are mainly researchers (e.g., university faculty members) residing outside the Tadami BR area, from various academic fields, specializing in ecology, forest ecology, animal ecology, applied entomology, ecological genetics, environmental conservation, nutrition, agriculture, agricultural economics, agricultural engineering, art, etc.

General citizens (public comments):

Mainly residents living in the Tadami BR area

1.5.2 What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts).

Tadami Biosphere Reserve Governance Board:

Plenary meetings, hearings of opinions in writing (all member organisations), and face-to-face hearings of opinions (Tadami Town Commerce and Industry Association, Tadami Branch of JA Aizu-Yotsuba, Tadami Town Forest Owners' Cooperative, Ihoku District Non-contribution Fishery Cooperative, Western Minami-Aizu Non-contribution Fishery Cooperative, Tadami District Head Liaison Council, Asahi District Head Liaison Council, Meiwa District Head Liaison Council, Tadami District Women's Association, Asahi District Women's Association, and Meiwa District Women's Association)

Tadami Biosphere Reserve Contributing Board:

Each contributing board member provided expert advice to the study team of the Governance Board for the preparation of the preliminary draft. The Contributing Board held plenary meetings to review the preliminary draft of the periodic review report for the Tadami BR, compiled opinions for revision and recommendations on the preliminary draft, and submitted them to the Governance Board.

1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?

Tadami Biosphere Reserve Governance Board:

Two plenary meetings, two hearings of opinions in writing, and 11 face-to-face hearings of opinions

Tadami Biosphere Reserve Contributing Board:

Twice (in writing and a meeting)

1.5.4 Were they well attended, with full and balanced representation?

(Describe participation and stakeholders).

Despite the difficult conditions with the influence of COVID-19, the attendance rate at the plenary meetings of the Governance Board was 60-80% and that of the Contributing Board was 65%. With the active cooperation of the stakeholders, it is believed that objective and scientific summarisation and review of the various activities in the Tadami BR for ten years after registration.

2. 2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS:

2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.

The Tadami BR area, located in a typical mountainous area of Japan, has experienced rapid depopulation and aging of its population. As of June 2014, when the Tadami BR was designated, the population of the Tadami BR area was 4,573, and the proportion of elderly people aged 65 or older (the population aging rate) was 43.2%, but as of April 2023, the population was 3,750, and the population aging rate was 48.9%. As a result, traditional lifestyles, industries and cultures that depend on the natural environment and natural resources are declining, and the relationship between nature and humans is gradually weakening. On the other hand, human load on the natural environment and natural resources by the local residents is decreasing, and the rich natural environment and biodiversity are better protected. At the same time, biodiversity is reducing in some parts of the secondary natural environment of village-vicinity mountains and fields as their use declines against a background of depopulation, aging of population, population decrease and changes in lifestyles. This situation has been spurred by an increase in the population of large wild animals such as Japanese sika deer and Japanese wild boars, causing damage to agricultural crops and raising concerns about the impact on the ecosystem.

The designation of Tadami BR in 2014 was an international recognition of the Tadami region's natural environment and biodiversity nurtured by heavy snowfall and the lifestyles and culture of the local residents who rely on such natural environment and diversity as a model for coexistence between humans and nature. This led to pride and confidence for the residents of the Tadami BR area. Furthermore, the designation and the BR-related initiatives led by Tadami Town have raised the momentum for activities to better protect the local natural environment and biodiversity and to inherit and develop the traditional lifestyles and culture that have utilized local resources in a sustainable manner. For example, in the branding project of "traditional products of 'Tadami, the Capital of Mother Nature'", which are local brand products using Tadami Town's natural resources, agricultural products and traditional techniques, residents who are willing to inherit and develop the traditional lifestyles and culture of the region have newly emerged through the development of such products. In agriculture, especially rice cultivation, which is a key industry in Tadami Town, farmers have been voluntarily making efforts to promote the branding of rice through production methods that take into consideration the conservation of the natural environment and, by providing agricultural experiences to children, and there has been a movement to use agriculture to maintain and develop the local community that is experiencing the depopulation and aging of its population.

With regard to governance during the last 10 years, in July 2014 immediately after the designation of the Tadami BR, the "Tadami Biosphere Reserve Governance Board", consisting of 24 bodies and organisations related to the Tadami BR (currently consisting of 23 members due to the dissolution of one organisation), was organized as the highest decision-making body for the management and operation of the Tadami BR. In addition, as an advisory body to the Tadami Biosphere Reserve Governance Board, the "Tadami Biosphere Reserve Contributing Board", consisting of experts from various fields was organized (with 6 members at the time of inauguration, and 17 members currently). Furthermore, the Mayor of the Tadami Town, who plays a central role in Tadami BR activities and serves as a representative of the Governance Board, changed twice over the past 10 years, but there have been no major changes in the BR management and operation system and coordination functions.

The Tadami BR is located in Fukushima Prefecture, and one of the objectives for the designation was to contribute to the reconstruction of Fukushima Prefecture, which was affected by the Great East Japan Earthquake and the accident at

Fukushima No.1 Nuclear Power Plant in 2011, through the existence of Tadami BR's natural environment, lifestyles and culture as well as initiatives as a BR. The Tadami BR's stakeholders have been working for the last ten years to achieve this objective. For example, when the Tadami BR was designated in 2014, it was reported by many media outlets and many people visited the Tadami BR, and they communicated the richness of the natural environment and biodiversity of Fukushima Prefecture through the natural environment and biodiversity within the Tadami BR area and the traditional lifestyles and culture of the local residents who rely on them, as well as the original way of life of the people who are involved with them. After that, the stakeholders have also been actively and continuously making efforts to protect and utilize the natural environment and biodiversity within the area, as well as the traditional lifestyles and culture of the local residents who rely on them (For details, refer to 2.2.4, 2.2.5, and 2.2.6). For example, the existence of new species of organisms (e.g., Tadami clawed salamander (*Onychodactylus fuscus*)) and the richness of the unique ecosystems revealed through academic research and studies (e.g., Numa-no-daira Comprehensive Academic Research. For details, refer to 6.2) were widely disseminated through the media, symbolising the richness of the natural environment in Fukushima Prefecture. Tadami Beech Center has actively disseminated information through exhibition and sales of local brand products ("traditional products of 'Tadami, the Capital of Mother Nature'") using Tadami's natural resources, agricultural products and traditional techniques at themed exhibitions held by the Tadami Beech Center in the Tokyo Metropolitan area to introduce the nature, lifestyles and culture of Tadami. Furthermore, the producers of "traditional products of 'Tadami, the Capital of Mother Nature'" have been individually interviewed by the media to disseminate information on how humans and nature coexist. We believe that these efforts by the Tadami BR's stakeholders have made humble contributions to the reconstruction of Fukushima Prefecture after the accident at Fukushima No.1 Nuclear Power Plant.

The spread of COVID-19 infection, which began in 2019, has had a significant impact on regional socio-economic activities and the BR activities have also been severely restricted. In particular, the impact on the tourism industry was significant, and among the BR activities, human exchanges significantly stagnated.

2.2 Updated background information about the biosphere reserve.

2.2.1 Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84):

No changes in Tadami BR's geographical coordinates.

Cardinal points:	Latitude	Longitude
Most central point:		
Northernmost point:		
Southernmost point:		
Westernmost point:		
Easternmost point:		

2.2.2 If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve Map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form.

If applicable, also provide a link to access this map on the internet (e.g. Google map, website).

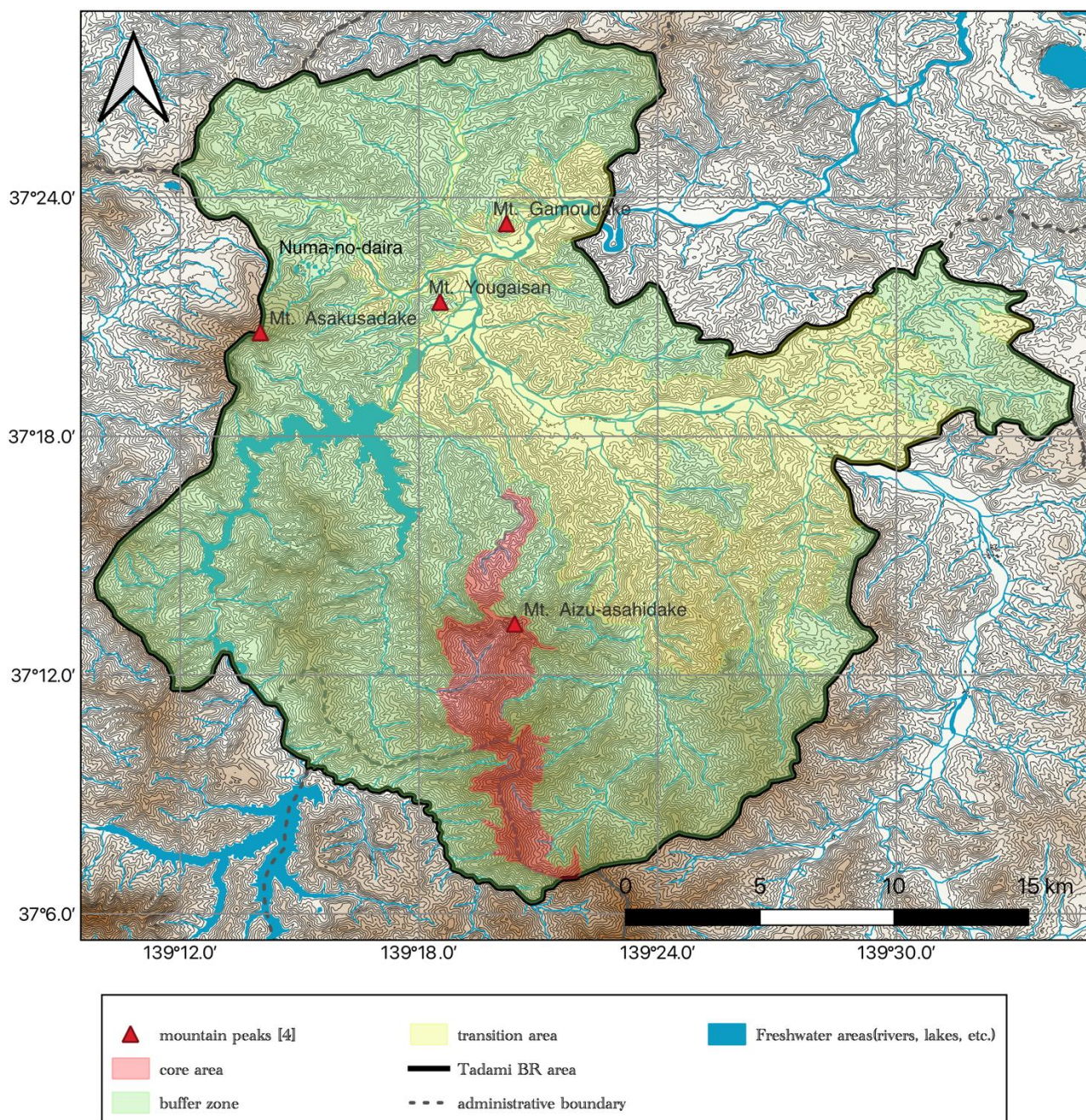


Figure 2-1 Zoning map of Tadami BR

Contour maps were drawn from ASTER global 3D topographic data (ASTER Global Digital Elevation Model Version 3: ASTGTM, <https://doi.org/10.5067/ASTER/ASTGTM.003>) using the free GIS software QGIS (<https://qgis.org/ja/site/>). Contour intervals are 50 m.

2.2.3 Changes in the human population of the biosphere reserve.

Most recent census data:

The population in the Tadami BR area decreased by 888 people in the ten years from 2010, before the Tadami BR's registration, to 2020, after the registration.

Table 2-1 Population change before and after registration within the Tadami BR

Year 2010 (Population)	Year 2015 (Population)	Year 2020 (Population)
4,932	4,470	4,044

Reference: "National census," Ministry of Internal Affairs and Communications

According to the survey conducted by Tadami Town in April 2023, the latest population is 3,750.

2.2.4 Update on conservation function, including main changes since last report.

(Note briefly here and refer to 4 below).

[Core Area]

There are no changes in the location and area of the core area. Fukushima Prefecture plans to install chains on the steep slopes of the existing mountain trails within the core area to ensure the safety of climbers and to avoid harmful effects on the surrounding vegetation due to climbing out of routes to conserve the vegetation.

[Buffer Zone]

(Strengthening the conservation function by reviewing the existing legal systems, etc.) For details, refer to 4.2.

- In 2017, the Kanto Regional Forest Office of the Forestry Agency expanded the protected area by incorporating the "Numa-no-daira area" (100.4 ha), which was designated as a recreational forest in the buffer zone in the northwestern part of the Tadami BR, into the "Conservation and Utilisation Zone of Oku-Aizu Forest Ecosystem Reserve," the Protected Forest under the Act Concerning Utilization of National Forest Land. This measure has caused no change in the management classification of the BR in the area.
- In 2017, the Kanto Regional Forest Office of the Forestry Agency removed the designation of the Protected Forest "Hometown Forest," which was established in the "Blessed Forest" (469.98 ha) within the buffer zone in the northeastern part of the Tadami BR under the Act Concerning Utilization of National Forest Land, in accordance with the revision of the protected forest system. After that, following a request from Tadami Town, the "Blessed Forest" and the surrounding national forests (1707.14 ha in total) were incorporated into the Protected Forest "Conservation and Utilisation Zone of Oku-Aizu Forest Ecosystem Reserve" in 2022, ensuring the expansion and continuity of the protected area. This measure has caused no change in the management classification of the BR in the area.
- In 2021, Fukushima Prefecture, following the review of the Echigosanzan-Tadami Quasi-national park under the Natural Park Act, designated the "Numa-no-daira area" (138 ha) located in the northwestern part of the Tadami BR and "Mt. Gamoudake area" (119 ha) located in the northern part of the Tadami BR as Special Zones of the Park. As a result, the area of the buffer zone of the Tadami BR increased by 119 ha (The area of the "Numa-no-daira area" (138 ha) is not included because it has been included in the buffer zone since before).

(Opening of national road through cool-temperate deciduous broad-leaved forest (beech forest)) For details, refer to 4.1.

In the area including the northwestern part of the Tadami BR, there is an impassable section for automobiles (commonly known as National Route 289, Hachijuri Mountain Road), and the Ministry of Land, Infrastructure, Transport and Tourism and Fukushima Prefecture have carried out the reconstruction and opening work since 1989, before the registration of the Tadami BR, with the aim of eliminating the impassable section and promoting interregional exchanges. The construction section in the Tadami BR runs through the natural beech (*F. crenata*) forest in the buffer zone (the road site and related facilities are in the transition area), and this beech forest is one of the most natural forests in the Tadami BR area. The Ministry of Land, Infrastructure, Transport and Tourism and Fukushima Prefecture have established the “Hachijuri Mountain Road Environmental Review Committee” composed of persons of learning and experience to examine specific environmental conservation measures for the development of the road, and have taken conservation measures.

On the other hand, in the interim review of the “Tadami Biosphere Reserve Management Plan,” which sets forth the basic policy for appropriate management and operation of the Tadami BR, the Tadami Biosphere Reserve Governance Board newly stipulated in the plan that it shall consider and implement an impact assessment of the opening of National Route 289, Hachijuri Mountain Road on the natural environment, the common practices of the local residents and the inland water fishery rights, and measures against the impact. Based on this, the Governance Board consulted its advisory body, the Tadami Biosphere Reserve Contributing Board, on the impact and measures associated with the opening of National Route 289, Hachijuri Mountain Road, and the Contributing Board submitted a report to the Governance Board. The Governance Board decided to address the issues presented in the report as much as possible. However, more than a few decades have already passed since the start of construction, most of the road structures have been completed, and it is difficult to drastically change the construction plan, so the challenge is how to realise the report of the Contributing Board. Fukushima Prefecture and the Construction Work Office of the Ministry of Land, Infrastructure, Transport and Tourism, which are the main contractors, have announced that they will take all possible measures to realise the principles and objectives of the UNESCO Biosphere Reserve with the cooperation of Tadami Town, Tadami Biosphere Reserve Governance Board, and the Tadami Biosphere Reserve Contributing Board in order to carry out construction work appropriate for the Tadami BR for the future road construction.

[Transition Area]

(Enactment and operation of the “Ordinance to Protect Wild Fauna and Flora in Tadami Town”) For details, refer to 4.2.

In the Tadami BR, theft and collection of rare wild plants have long been considered a problem as they impair the biodiversity of the area. Furthermore, in the transition area of the Tadami BR, there was no legal system to protect and conserve the natural environment and biodiversity. Therefore, in June 2016, Tadami Town enacted the “Ordinance to Protect Wild Fauna and Flora in Tadami Town”, which stipulates that all concerned parties shall understand the value of the existence of wild fauna and flora living and growing in Tadami Town and strive to protect and conserve them in order to realise the principles and objectives of the BR. This ordinance applies within the area of Tadami Town, which accounts for approximately 96% of the area of the Tadami BR, and the transition area is included entirely in this area. This ordinance stipulates that efforts shall be made to protect and conserve the populations and habitats of the species of wild fauna and flora listed on the Red List published by the national government and Fukushima Prefecture, as well as species designated by Tadami Town, and that acts such as catching wild fauna and flora in large numbers (collecting insects using light traps) shall be prohibited. Furthermore, Tadami Town has commissioned citizens with knowledge of the natural environment and wild fauna and flora to be “Tadami Town wild fauna and flora observers” (Photo 2-1), and established a system for cooperating with local residents to protect and conserve wild fauna and flora. In addition, Tadami Town also installed banners to publicise the ordinance (Photo 2-2), and used its website to publicise it. As a result, the number of reports of theft of valuable wild plants and use of light traps decreased drastically compared to that before the ordinance was enacted. Various development projects in the Tadami BR have also been coordinated to plan and implement projects that take into consideration the protection and conservation of wild fauna and flora in accordance with the ordinance.



Photo 2-1 Citizens of Tadami Town who were commissioned to be “Tadami Town wild fauna and flora observers”



Photo 2-2 Banner placed along the national road to publicise the ordinance

(Designation and maintenance of “Tadami Observation Forest”) For details, refer to 4.2.

Tadami Town designated nine places in the transition area of the Tadami BR, including a small area of beech (*F. crenata*) forest, as “Tadami Observation Forest” (hereinafter referred to as “Observation Forest”) and developed them as part of the UNESCO Biosphere Reserve project, with the aim of protecting valuable natural environments and species that exist in the transition area and understanding the actual situation of the natural environment and wild fauna and flora in the Tadami BR area by getting familiar with them (total area: 16.45 ha). In the Observation Forest, rules for use have been established to ensure both the conservation of the natural environment and its sustainable use.

(Conservation of wetlands) For details, refer to 4.2.

A wetland can be a hot spot for local biodiversity. The Oosone wetlands designated as a natural monument of Tadami Town are located in the transition area in the eastern part of the Tadami BR. In the past, a wooden footpath was installed for observation, and as a result, the wetlands have been drying up and the vegetation of the wetlands has been declining. Therefore, Tadami Town implemented conservation measures and also developed surrounding walkways that allow visitors to observe the wetlands.

(Spread of damage due to Japanese oak wilt in secondary forests of deciduous broad-leaved trees (Japanese oak forests)) For details, refer to 4.1.

Since 2010, before the designation of the Tadami BR, wilt disease of Fagaceae trees (commonly known as Japanese oak wilt) had invaded the Tadami BR area from adjacent areas, causing damage to Japanese Oaks (*Q. crispula* var. *crispula*) growing mainly in natural forests and Japanese Oaks (*Q. crispula* var. *crispula*) and Konara Oaks (*Q. serrata*) growing in former copses for firewood and charcoal. By 2021, this damage had spread to almost the entire area of the Tadami BR. However, so far there has been no significant impact of this on the biodiversity of the area. Although some adverse impacts on the natural landscape have been observed, there have been no apparent changes in the regulating and supporting services for ecosystems. The Minami-Aizu branch office of Aizu District Forest Office of Kanto Regional Forest Office and Tadami Town have been working to reduce the damage by injecting germicide for *Raffaelea quercivora* into trunks and installing decoy logs to attract and kill *Platypus quercivorus*, which carries *Raffaelea quercivora*.

(Establishment of sediment storage area for disposal of dredged sediment from the dam lake) For details, refer to 4.1.

Sediment that was produced in and ran downward from the upstream area is held back and deposited in a regulating reservoir (in the Tadami BR area) located upstream of the Taki Dam (a hydroelectric dam) constructed on the Tadami River outside the northern part of the Tadami BR. The dam management company, Electric Power Development Co., Ltd., has dredged the deposited sediment and created a sediment storage area of several hectares on land within the Tadami BR area since 2019 in order to prevent flooding damage due to rising flood levels caused by sediment deposition. Although the dam is a structure that was constructed before the designation of the Tadami BR, sediment is currently being deposited in the dam lake, facing new challenges, such as concerns about new natural disasters, impacts on wild fauna and flora, ecosystems, landscapes and local industries in and around the dredged sediment storage area, and noise and CO₂ emission problems from large dump trucks that carry sediment.

(River improvement and degradation of riparian environment) For details, refer to 4.1.

The riparian forests in basins of the Tadami River and the Ina River in the Tadami BR are home to the rare tree species *S. hukaoana*, which is classified as Endangered II (VU) in the Red List of the Ministry of the Environment (2020), and are part of one of the largest natural growth areas in Japan. The rivers in the basins of the Tadami River and the Ina River were swollen and flooded due to the Niigata and Fukushima heavy rainfall disaster in July 2011, and some of their riparian forests were also washed away. Furthermore, river improvement was carried out after the disaster to protect the lives and property of the local residents in the basins, but this river improvement did not give sufficient consideration to the conservation of the riparian environment. As a result, the natural disturbance system required for renewal of *S. hukaoana* has been changed, which reduced the sizes of some populations and is threatening their survival.

(Large mammals with expanding distribution and population management) For details, refer to 4.1.

The Tadami BR area is located in a region with heavy snowfall. However, in recent years, the snow accumulation has decreased due to effects of global warming, and Japanese Sika deer (*Cervus nippon*) as well as Japanese wild boars have moved in, increasing their populations in this area. On the other hand, due to the decrease in and aging of the hunting population and continued restriction on shipment of wild bird and animal meat as a result of the accident at Fukushima No.1 Nuclear Power Plant in 2011, it is difficult to properly manage the populations of these wild animals through hunting pressure. It is feared that this will have a significant impact on local natural ecosystems and agriculture and forestry in the future. In recent years, the number of young hunters (in their 30s-40s) who are interested in preventing such damage and in hunting culture has been increasing.

(Invasion and spread of alien species) For details, refer to 4.1.

In recent years, alien plants, such as *Rudbeckia laciniata* (designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species), which have been introduced through river improvements and other public works, have been rapidly expanding their distribution mainly in river zones. Furthermore, such alien plants invaded and established themselves in abandoned farmland adjacent to river zones, becoming hotbeds for the expansion of their distributional areas.

2.2.5 Update on the development function, including main changes since last report.

(Note briefly here and refer to 5 below).

The Tadami BR is a typical mountainous area located in a region with heavy snowfall in Japan. Like other similar areas, the Tadami BR experienced depopulation, aging of population, declining birthrate and population decline even after its registration as a BR. On the other hand, the Tadami BR still has an excellent natural environment and natural resources (edible wild plants, mushrooms, firewood, etc.) that have been passed down through generations, and traditional culture and lifestyles of the residents who have relied on such environment and resources, and it is also an area where people and nature have historically coexisted in a sustainable way. Therefore, the Tadami BR has adopted a policy for sustainable development that it will strive to promote regional development utilising the traditional culture and lifestyles that rely on such natural environment and natural resources as a means to solve various problems in the mountainous area.

(Branding project of “traditional products of ‘Tadami, the Capital of Mother Nature’”) For details, refer to 5.5.

As a project related to UNESCO Biosphere Reserve, Tadami Town certified products using natural resources, agricultural products and traditional techniques in the Tadami BR as “traditional products of ‘Tadami, the Capital of Mother Nature’”, and promoted their branding. Thirty-four products have been certified as traditional products, including weaving handiwork using plants such as silver vine (*Actinidia polygama*), honey obtained from honey plants such as Japanese horse chestnut (*Aesculus turbinata*), Japanese chestnut (*Castanea crenata*) and *Kalopanax septemlobus*, dyed textiles of leaves of Japanese beech (*F. crenata*), chopsticks made from *Lindera umbellata* var. *membranacea*, and cotton balls using Osmund (*Osmunda japonica*), and 24 business operators in Tadami Town are involved. These products are sold as typical specialties and souvenirs of the Tadami BR, and contribute to dissemination of information about the natural environment, lifestyles and culture of the Tadami BR and to the local economy (Photo 2-3). Some of the business operators are operated by elderly people, which means that the project also contributes to the welfare of the elderly generation.



Photo 2-3 “Traditional products of ‘Tadami, the Capital of Mother Nature’” sold at the museum shop in the “Tadami Beech and River Museum”

(Agriculture (rice) based on rich natural environment) For details, refer to 5.3.

Farmers in the Tadami BR produce rice with good taste by using production methods that take into consideration the conservation of the natural environment and are promoting the branding of “Tadami Rice,” against the background of a water source from heavy snowfall and a rich natural environment, including beech forests, in the Tadami BR. Furthermore, high value-added products such as sake using the rice have been developed. Although paddy rice is the main agricultural crop in the Tadami BR, many farmers also engage in multiple farming, cropping a horticultural crop, such as “Nango Tomato,” which is a summer/autumn tomato with a high cash conversion rate, in addition to paddy rice. The number of new farmers using this type of management is gradually increasing.

(Promotion of forestry in heavy snowfall area and realization of low carbon society)

Planted forests of Japanese cedar (*Cryptomeria japonica*) and Japanese larch (*Larix kaempferi*), which were planted after World War II under the expanded afforestation policy to meet the demand for wood, are important resources in the Tadami BR area, but they were left uncared for due to managerial reasons such as low wood prices and high production costs. For the purpose of developing, disseminating and experiencing forest management techniques adapted to a heavy snowfall area, the “Tadami Heavy Snowfall Forestry Experience and Observation Forest” (1.8ha planted forest, hereinafter referred to as “Experience Forest”) was established in such a planted forest. The Experience Forest is funded by companies of Nomura Research Institute Group (based in the Tokyo Metropolitan area) for its forest maintenance, and employees of the group companies and the local residents interact through volunteer forest maintenance work.

In the Tadami region, fuel wood necessary for daily life such as cooking and heating is traditionally obtained from forests adjacent to the settlements (Photo 2-4). In today’s world, the use of wood energy as described above reduces the consumption of fossil fuels and contributes to curbing global warming.

Furthermore, the Firewood Energy Promotion Office was established in the Tadami Town Hall in 2022, aiming to realise a low-carbon society and economic circulation within the Tadami BR area by using wood resources as part of the development of the planted forests and secondary forests of deciduous broad-leaved trees in the Tadami BR to fulfil the multifunctional roles of forests.



Photo 2-4 Firewood production in early spring, a tradition practiced even today when fuel fossils are on the rise

(Tourism utilising local resources)

Tadami Town has been working on a project to train official guides to guide and explain Tadami’s natural environment and wildlife, and has certified 16 guides. Furthermore, the town provides follow-up training for the certified official guides to improve the quality of the guides. The Tadami Town Planning Association was in charge of accepting applicants for guided eco tours and arranging guides, but the association was dissolved in 2022. The “Home Town Tadami Guides Association,” which was formed in 2021 mainly with Tadami Town official nature guides, has taken over this work.

In October 2022, the Tadami Line of East Japan Railway Company (JR East), which was damaged by the Niigata and Fukushima heavy rainfall disaster in 2011 and had been partially closed, resumed full operation, and is expected to be one of the pillars of regional tourism (Photo 2-5).



Photo 2-5 In October 2022, JR Tadami Line resumed full operation for the first time in 11 years. Passengers can enjoy views of nivation landform, beech forests, settlements, etc.

(New road development and opening)

Although the Tadami BR is adjacent to Niigata Prefecture, it is located in one of the heaviest snowfall areas in Japan, so there is no road that is continually passable in winter (National Route 252, Rokujuri Mountain Road, the only connecting road with Niigata Prefecture, is closed in winter due to snow accumulation). In order to solve this traffic problem, the Ministry of Land, Infrastructure, Transport and Tourism and Fukushima Prefecture have been constructing the National Route 289, Hachijuri Mountain Road (commonly known as Hachijuri Mountain Road) connecting Tadami Town, Fukushima Prefecture and Sanjo City, Niigata Prefecture since before the designation of the Tadami BR, and the road is still under construction. This road is expected not only to solve winter traffic problems in this region, but also to contribute to the lives, industries and regional development of this region. On the other hand, the road is expected to have a large impact on the natural environment and the lives of the residents along the road. Therefore, how to realise the coexistence of nature conservation and human activities through cooperation and consultation among the parties concerned is being questioned (For details, refer to 4.1).

2.2.6 Update on logistic support function, including main changes since last report.

(Note briefly here and refer to 6 below).

(“The Capital of Mother Nature’: An academic investigation research subsidy project” and making Tadami BR an investigation research centre) For details, refer to 6.2.

In 2012, prior to the registration of the Tadami BR, Tadami Town established the “The Capital of Mother Nature’: An academic investigation research subsidy project” to support researchers and research groups conducting basic and applied research related to protection, conservation, restoration, regeneration and utilisation of biodiversity in Tadami Town, and research related to utilisation of sustainable ecosystem services and preservation and inheritance of historical cultural heritage and folk customs. Applications were solicited through public invitation, and subsidies were granted for a total of 62 research themes from 2012 to 2022. The Tadami Beech Center, an organisation of the Tadami Town Office, supports this investigation research and is working to make the Tadami BR an investigation research centre.

(Basic research on natural environment and social culture) For details, refer to 6.2.

The “‘The Capital of Mother Nature’: An academic investigation research subsidy project” is based on spontaneous interest of researchers who conduct academic investigation research within the Tadami BR, and does not necessarily correspond to the investigation research that the Tadami BR or Tadami Town recently require. Therefore, Tadami Town proceeded with basic research on its own unique issues required for the management and operation of the Tadami BR. The results obtained from the research were published in the academic investigation research report (BULLETIN of the Tadami Beech Center) published by the Tadami Beech Center, and also made public at a special exhibition and a briefing session held at the “Tadami Beech and River Museum.”

- 2012- : Monitoring survey of the old-growth Siebold’s beech forest
- 2012- : Survey on Japanese oak wilt damage distribution
- 2013- : Survey on how rich or poor the harvest of nuts of *F. crenata*
- 2014-2015 (2 years): Survey on insect fauna in Tadami Town (entrusted to Forestry and Forest Products Research Institute)
- 2014-2016 (3 years): Survey on actual conditions of wetlands in Tadami Town (entrusted to Forestry and Forest Products Research Institute)
- 2015-2016 (2 years): Survey on freshwater fish fauna in the basin of the Ina River (entrusted to Fukushima Marine Science Museum, Public Interest Incorporated Foundation)
- 2016-2019 (4 years): Survey on actual conditions of old Japanese-style houses (entrusted to Shinshu University)
- 2017-2021 (5 years): Comprehensive academic investigation of Numa-no-daira (entrusted to Niigata University)
- 2013, 2015, 2020- : Survey on distribution of native Japanese char (in cooperation with Western Minami-Aizu Non-contribution Fishery Cooperative, Ihoku District Non-Contribution Fishery Cooperative, local residents, Fukushima Marine Science Museum, Public Interest Incorporated Foundation, and National Museum of Nature and Science)
- 2020- : Survey on actual habitat conditions of rare raptors (in cooperation with Tadami Biosphere Reserve Contributing Board, Nature Conservation Society of Japan, and raptor researchers from Minakami BR AKAYA Project Regional Council)
- 2022- : Survey on habitat and distribution of the Japanese black bear (*Ursus thibetanus japonicus*) (in cooperation with Tadami Biosphere Reserve Contributing Board, and Gifu University)

The Education Board of Tadami Town conducted surveys related to the following cultural properties and others.

- 2014-2017: Excavation of Miyamae ruins
- 2014-2015: Bibliographic survey of the books of the Harada family of doctors
- 2014- : Survey on Hachijuri-goe ancient road

(Enhancement of museum facilities to learn about the region)

In 2016, Tadami Town acquired the “Tagokura Heritage Center”, a private museum of history and folklore established by Wataru Minagawa from Tagokura, with the aim of preserving the history, lifestyles and culture of the former Tagokura settlement, which sank to the bottom of the lake following the construction of the Tagokura Dam, and organized and exhibited folklore materials and folk utensils of the former Tagokura settlement, and materials related to the construction of the Tagokura Dam collected and owned mainly by Bunya Minagawa (Wataru Minagawa’s father). (Managed and operated by the Tadami Beech Center)

In 2022, the Education Board of Tadami Town opened the “Tadami Museum of Folklore and History” which houses and exhibits 2,333 items of the “Collections of Production Tools and Working Clothes of Aizu-Tadami,” which are National Important Tangible Folk Cultural Properties. (Management and operation: Education Board of Tadami Town)

In 2021, the Education Board of Tadami Town acquired the “Residence of the Hasebe Family (Kanozu guardhouse site)” (Fukushima Prefecture Important Cultural Property) located in the Kanozu area, and opened it to the public together with the Former Residence of the Igarashi Family (National Important Cultural Property).

(Membership in UNESCO Associated Schools Project Network and promotion of ESD)

From 2015 to 2017, all elementary and junior high schools (3 elementary schools and 1 junior high school) in the Tadami BR area were approved to join the UNESCO Associated Schools Project Network (ASPnet). At each school, Education for Sustainable Development (ESD) is being promoted with a focus on local learning, “Tadami Study”. In order to support the activities of the UNESCO ASPnet, Tadami Town provided each school with books related to BRs in Japan. Furthermore, the Tadami Beech Center and the Education Board of Tadami Town dispatch lecturers to promote Tadami Study and provide museum facilities (Tadami Beech and River Museum, Tagokura Heritage Center, Tadami Museum of Folklore and History, etc.) as places for learning.

Tadami Municipal Tadami Junior High School is working to realise SDGs through ESD that considers the relationship between mountains and sea and the plastic problems, including activities to promote the use of shopping bags made from recycled newspaper, “Tadami Junior High School Climate Emergency Declaration” by the student council, and activities to reduce plastic bottles. These activities by the students have also affected environmental conservation efforts by adults in their industrial activities (agriculture) in the Tadami BR area (For details, refer to 5.7). Furthermore, Tadami Junior High School also participates in the Shinshu ESD Consortium where they strive to interact with other regions through case study presentations of their activities.

URL of video of Tadami Junior High School’s presentation at the 2022 Shinshu ESD Consortium (with presentation in English)
<https://www.youtube.com/watch?v=TkKUnMbXoiE&t=12609s>

*Shinshu ESD Consortium:

Shinshu ESD Consortium was established in February 2017 under the leadership of the Faculty of Education of Shinshu University, and a wide variety of entities involved in children’s learning, such as UNESCO ASPnet, boards of education, private UNESCO associations, NGOs, companies and organisations, participate in the Consortium. The Consortium conducts activities such as disseminating information related to ESD, coordinating practices, holding various workshops and exchange meetings.

(Excerpt from Shinshu ESD Consortium website <https://esd-nagano.org/consortium/>)

2.2.7 Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure.

(Note briefly here and refer to 7 below).

(Management and operation of Tadami BR and organisation of Tadami Biosphere Reserve Governance Board)

On 10 July, 2014, the “Tadami Biosphere Reserve Governance Board” was organized by bodies and organisations related to the Tadami BR in order to realise the objective of the BR, which is the coexistence of the natural environment and human society. The Governance Board is the highest decision-making body for the management and operation of the Tadami BR, and is also responsible for promotion of the Tadami BR project, resolution of problems the project faces, and liaison and coordination among the bodies and organisations. The Governance Board is comprised of 24 bodies and organisations (currently 23 bodies and organisations due to the dissolution of one organisation), and Tadami Town, which is the main applicant for the registration of the Tadami BR, serves as its chairperson and secretariat. At the plenary meetings of the Governance Board, the following matters are liaised and coordinated: (1) those related to protection and conservation of the natural environment and biodiversity in the Tadami BR area; (2) those related to socio-economic development of the area through sustainable utilisation of the natural environment and resources in the

Tadami BR area; (3) those related to academic research and human resource development; (4) those related to dissemination of information about the Tadami BR; and others.

The Governance Board has its Secretariat at the “Tagokura Heritage Center”, a facility attached to the Tadami Beech Center, and the UNESCO Biosphere Reserve Promotion Section at the Tadami Town Office is responsible for liaison and coordination for the Governance Board.

In addition, the “Tadami Biosphere Reserve Contributing Board,” consisting of experts from various fields (with 6 members at the time of its establishment, and currently 17 members), was organized as an advisory body to the Tadami Biosphere Reserve Governance Board. The Contributing Board provides scientific and expert advice and recommendations on the management and operation of the Tadami BR and BR projects that are planned and implemented by the members of the Governance Board, at the request of the Governance Board.

(Formulation of plans for proper management and operation of Tadami BR)

In February 2015, the Tadami Biosphere Reserve Governance Board formulated the “Tadami Biosphere Reserve Management Plan,” which sets forth basic policy for proper management and operation of the Tadami BR (Mid-term review of the plan was conducted in March 2019). The members of the Governance Board shall strive to develop an action plan based on this Management Plan to promote the BR.

In December 2015, Tadami Town, the main municipality that makes up the Tadami BR, formulated an “Action Plan for the Promotion of Tadami BR” based on the “Tadami Biosphere Reserve Management Plan” (Mid-term review of the plan was conducted in December 2019).

The project plans by the members of the Governance Board and the results of their implementation are shared and coordinated by the “Tadami Biosphere Reserve Governance Board.”

(Changes in Tadami Town, the main management and operation body)

With the formulation of the 6th Tadami Town development promotion plan (2006) and the declaration of “Tadami, the Capital of Mother Nature”, (2007) Tadami Town had been promoting town development utilising the local characteristics such as nature, history, culture, lifestyles, and industries inherited in the region with the natural environment and resources represented by beech forests as its core. After the registration as a BR, the 7th Tadami Town development promotion plan, which was newly formulated in 2016, incorporated measures related to three functions of the BR. Based on these plans, Tadami Town has been planning and implementing projects to promote the Tadami BR. At the time of the registration of the Tadami BR, Tadami Town reorganized the “Tadami Beech Center”, which was established in 2007 for community development utilising the natural environment represented by Tadami’s beech forests, as the core organisation to promote the Tadami BR, in order to work on BR promotion projects by Tadami Town.

After the registration as a BR, the mayor of Tadami Town (a chairperson of the Tadami Biosphere Reserve Governance Board) changed from Mr. Yoshihisa Meguro, to Mr. Mitsuo Kanke, and to Mr. Isao Watanabe, all local residents, but the policy of town development incorporating the principles and objectives of BR was handed down. The section in charge of UNESCO Biosphere Reserve operations at the Tadami Town Office was placed in the planning section from the time of the BR registration until 2023, but it was relocated to the regional exchange section in 2023. However, there has been basically no change in terms of the hierarchical relationship and coordination structure of administrative departments.

2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve:

(Comment on the following topics as much as is relevant).

2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years

The objectives of Tadami BR's activities are prescribed in the "Tadami Biosphere Reserve Management Plan" (Period of the plan: From 2015 to the UNESCO review of this periodic review report), which was formulated by the Tadami Biosphere Reserve Governance Board in 2015. The contents are as follows.

"The Tadami BR (1) aims for socio-economic development of the region by protecting and conserving the rich natural environment (snow and beech forests) and natural resources in this region in accordance with the principles and objectives of the biosphere reserves under the UNESCO MAB Programme and by inheriting and developing local traditions, culture and industries through sustainable utilisation of such environment and resources, thereby promoting self-reliance and revitalization of the region, and (2) aims to contribute to domestic and international society as a 'model region where humans and nature co-exist' by sharing information and human resources obtained through such efforts with BRs in Japan and abroad through the BR network and other means."

The objectives of activities are reflected in the 7th Tadami Town development promotion plan (2016-2025).

The objectives of activities will not change significantly in the next 5-10 years. However, depopulation and ageing of the local community have progressed faster than expected over the past ten years, and the effects of depopulation and ageing will be taken into consideration in the next Management Plan and action plans, which will be formulated promptly after the UNESCO ICC review of this periodic review report. Furthermore, the objectives of activities shall also be reflected in the 8th Tadami Town development promotion plan, which will be formulated in 2026.

2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public),

innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

The following is information on budget, sources of funds, and staff in Tadami Town, which is the Secretariat of the Tadami Biosphere Reserve Governance Board and the main management and operation body of the Tadami BR.

(1) Tadami BR-related budget (excluding personnel expenses for staff in charge, and UNESCO ASPnet and other education-related expenses)

Average annual total (2014-2022): 11,330,000 yen

<Breakdown>		(Unit: yen)
BUDGET ITEM	AVERAGE AMOUNT/YEAR (2014-2022)	
Ordinary expenses (excluding personnel expenses)	1,200,000	
Conservation function project expenses	860,000	
Development function project expenses	1,410,000	
Logistic support function project expenses	5,750,000	
Tadami biosphere reserve governance board project expenses	1,280,000	
Other expenses (e.g., expenses for hosting symposium)	830,000	

(2) Staff support

The departments in charge of UNESCO Biosphere Reserve (UNESCO Biosphere Reserve Promotion Section, and Tadami Beech Center) in Tadami Town are not supported by staff from outside organisations.

(3) Main sources of funds

Most of the sources of funds for the Tadami BR-related budget of Tadami Town listed in (1) are from general fund of Tadami Town. Other financial support was provided as follows.

■ Subsidies from Fukushima Prefecture

<Subsidies for comprehensive support project for regional revitalisation>

2015: 7.08 million yen

2016: 2.7 million yen

2017: 7.3 million yen

2018: 1.087 million yen

<Subsidy for forest environment subsidy project>

2020: 0.397 million yen

<Subsidy for village-vicinity forests conservation project>

2022: 2.206 million yen

■ Funding from private sector

<Funding from Nomura Research Institute Group>

2016: 2 million yen (funding for the “Tadami Heavy Snowfall Forestry Experience and Observation Forest Project”)

(4) Number of full and/or part-time staff

Table 2-2 below shows the number of the staff of the UNESCO Biosphere Reserve Promotion Section at the Tadami Town Office, where the Tadami Biosphere Reserve Governance Board Secretariat is located, and the staff of the Tadami Beech Center, which conducts BR-related projects together with the UNESCO Biosphere Reserve Promotion Section at the Tadami Town Office. As for the staff of the UNESCO Biosphere Reserve Promotion Section at the Tadami Town Office, the number of full-time staff who can devote themselves purely to the UNESCO Biosphere Reserve project operations fluctuates between 2.5-0.5 people per year. Since the end of 2021, a part-time staff who is in charge of the JBRN secretariat has been employed. Furthermore, the staff members of the Tadami Beech Center, the

core organisation for UNESCO Biosphere Reserve promotion, are part-timers except for a full-time staff member (in a managerial position) who concurrently holds a post at the Tadami Beech Center.

Table 2-2 Changes in the number of staff at the Tadami Biosphere Reserve Governance Board Secretariat and the Tadami Beech Center (2014-2022)

Affiliation	Type of employment	2014	2015	2016	2017	2018	2019	2020	2021	2022
UNESCO Biosphere Reserve Promotion Section (Tadami Biosphere Reserve Governance Board Secretariat)	Full-time staff (one of them is concurrently working at general affairs dept. at Tadami Beech Center)	2	3	2	1	2	1	2	1	1
	Full-time staff (concurrently working in other sections, etc.)	0	0	0	0	0	1	0	1	1
	Part-time staff	0	0	0	1	1	1	1	1	2
Tadami Beech Center	Full-time staff (concurrently working in other sections, etc.)	1	1	1	1	1	1	1	1	1
	Part-time staff	4	4	6	6	6	7	5	6	5

2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

In 2015, the Tadami Biosphere Reserve Governance Board established its own logo as a symbol of the Tadami BR's principle, residents' determination and their collaboration, and the Governance Board manages the logo in accordance with the "Tadami Biosphere Reserve' Logo Management Regulations" (Figure 2-2). The logo is used to promote the Tadami BR.

Information on the Tadami BR is disseminated to the local communities through the Tadami Biosphere Reserve Governance Board website, public relations magazines, websites and social media of the Tadami Town Office and the Tadami Beech Center, mass media such as newspapers and TV, magazines, forums, symposiums, research presentations, etc. in order to seek understanding and cooperation for the activities of the Tadami BR. Tadami Town, which is the main management body of the Tadami BR and serves as the Secretariat of the Tadami Biosphere Reserve Governance Board, has been seeking residents' understanding and cooperation for the system of BRs and the activities of the Tadami BR by explaining them at administrative discussion meetings in the settlements in the BR area. Furthermore, the Tadami Biosphere Reserve Governance Board has responded to requests from the districts and various organisations to introduce the activities of the Tadami BR.

Outside of the region, as online communication has developed due to the influence of COVID-19, we have worked with private enterprises to introduce the Tadami BR widely online during a period from 2021 to 2022. As a result of this, people who did not know the Tadami BR before are now turning their attention to it.

As for support from outside organisations, the Tadami BR receives support from the Tadami Biosphere Reserve Contributing Board consisting of academics, and from universities, research institutes and researchers through "The Capital of Mother Nature': An academic investigation research subsidy project," which is a BR-related project, or commissioned investigation research.

The Tadami Biosphere Reserve Governance Board launched a website. The website is only available in Japanese, so it is hoped that English pages will be prepared in the future.



Figure 2-2 Tadami BR’s own logo depicting Tadami BR’s representative natural landscape as well as wild fauna and flora. The illustration is by Aki Kanke, an illustrator from Tadami Town.

2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections (“bridging”) among diverse groups in different sectors of the community (e.g. groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).

The UNESCO Biosphere Reserve Promotion Section and the Tadami Beech Center in Tadami Town are promoting the formation of various networks by serving as connections (“bridging”) among diverse individuals and organisations belonging to the three functional areas of the BR operation within and outside the BR.

For example, through investigation research in the Tadami BR area by universities, research institutions and researchers through “‘The Capital of Mother Nature’: An academic investigation research subsidy project” or commissioned investigation research, scientific knowledge about the local natural environment, history and folk customs can be obtained and accumulated, which also leads to academic contributions. Furthermore, the results of such investigation research will lead to the recognition of the natural environment, biodiversity, culture and traditions of Tadami outside the Tadami BR area (in Japan and abroad), and contribute to the regional development within the Tadami BR area.

2.3.5 Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve (e.g. promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).

- The “Ordinance to Protect Wild Fauna and Flora in Tadami Town” enacted by Tadami Town in 2016 raised the momentum to protect and conserve the natural environment and wild fauna and flora in the Tadami BR area. In particular, the ordinance plays a significant role in protecting and conserving the biodiversity in the transition area where sufficient protection measures had not been taken.

- The results regarding the natural environment, biodiversity, folklore, etc. obtained through “‘The Capital of Mother Nature’: An academic investigation research subsidy project” and commissioned investigation research were made public at briefing sessions and planned exhibitions, providing learning opportunities for local and neighbourhood residents. These projects have contributed to information and human exchanges in and outside the Tadami BR area.
- Products using local natural resources, agricultural products and traditional techniques have been developed through the “‘Tadami, the Capital of Mother Nature’ traditional products” branding project promoted by Tadami Town. This project has been raising the momentum to understand the importance of passing down the relationship between nature and humans in the Tadami BR and of developing industries based on them.
- At elementary and junior high schools in the Tadami BR area, the students have opportunities to learn about the natural environment, biodiversity, folk customs of the area through the local learning, “Tadami Study.”

2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.

(Sustainable utilisation of natural resources in common practices)

In the Tadami BR area, there has been a common practice of local residents collecting edible wild plants, such as Japanese royal ferns and bracken, and mushrooms on state-owned and common lands since ancient times, and it has been passed down to this day. Wild plants have played a major role as local seasonal food resources. For such collection and use, each settlement has established rules for the timing, locations and amounts of collection, and has taken measures to prevent natural resources from being eradicated and thereby to promote sustainable utilisation of natural resources.

On the other hand, restrictions on shipment of some edible wild plants and mushrooms continue to be in effect due to the effects of the scattering of radioactive materials caused by the TEPCO’s Fukushima Nuclear Power Plant accident in 2011. These restrictions are one of the factors that hinder active and sustainable utilisation of natural resources and stagnate the inheritance and development of the utilisation of Tadami region’s traditional natural resources.

Furthermore, when considering new ways of utilising natural resources, we must always consider whether or not the natural resources to be used are affected by radioactive materials. The Fukushima Nuclear Power Plant accident in 2011 continues to place financial and psychological burdens on the local residents, such as inspection costs, creating a situation in which they are unable to proactively develop new ways to utilize natural resources.

(Development of “traditional products of ‘Tadami, the Capital of Mother Nature’”)

As one of the projects to promote the Tadami BR, a project is underway to develop traditional products utilising local natural resources and traditional techniques, and the traditional techniques of woodworkers in woodworking, beekeeping techniques, and inherited traditional food processing techniques are being used to contribute to the development of new products.

2.3.7 Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?

- Tadami Town is promoting the inheritance and development of a culture of traditional use of local resources while branding products using local natural resources, agricultural products and traditional techniques through the “‘Tadami, the Capital of Mother Nature’ traditional products” branding project.

- Tadami Town has established the “Tadami Biosphere Reserve Activities Support Subsidy Project“ to subsidize activities that contribute to the promotion of the Tadami BR. For example, the Project supports the activities of a local preservation group that inherit traditional weaving handiwork using plant resources such as silver vine and akebi, and supports the development of “traditional products of ‘Tadami, the Capital of Mother Nature’”.
- Elementary and junior high schools in the Tadami BR area, which are members of the UNESCO ASPnet, have programs to learn about local cuisine and traditional performing arts, such as “Saotome dance of Kobayashi” and “Yanatori Kagura,” which are designated as Important Intangible Cultural Properties by Fukushima Prefecture, and to hold presentations.
- The “Tadami Beech and River Museum,” “Tagokura Heritage Center”, and “Tadami Museum of Folklore and History” publish and disseminate information on traditional culture, history and folk customs in the Tadami BR area through their exhibitions and websites.

2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?

The languages used as the spoken and written languages by most of the residents in the Tadami BR area belong to the Aizu Mountains dialect-Western Region dialect (Tadami River and Ina River systems) of the Minami-Ouu dialect zone. However, the detailed wording may slightly differ from district to district in the Tadami BR. These languages are still used on a daily basis, but there is a tendency for younger generations to gradually stop using these dialects. They are used in old tales passed down in the Tadami region, and they are passed down through the “Tadami Town Folklore Meetings.” Tadami Municipal Asahi Elementary School, a member of the UNESCO ASPnet, has a program in which students learn old tales under the guidance of the “Tadami Town Folklore Meetings” and present them at learning presentations. Research has been conducted to collect and record local languages (dialects) in this region, and printed materials have been published (Baba 1994; Tadami Town Town History Editing Committee 1996; Tadami Town Folklore Meetings 1999; Tadami Town Town History Editing Committee 2002). However, there are many terms that have not yet been collected, so there is an urgent need for interviews and records from the elderly.

<References>

- Baba Tani (1994), Grandma Tani’s Folktales – Folklores of Tadami, Okuaizu -, Yozo Baba, Tadami Town, Fukushima Prefecture **(in Japanese)**
- Tadami Town Town History Editing Committee (1996), Tadami Town history document collection No. 2, “Folklore of Aizu Tadami”. Tadami **(in Japanese)**
- Tadami Town Town History Editing Committee (2002), Tadami Town history document collection No. 5, “Dialect and local place names of Aizu Tadami”. Tadami **(in Japanese)**
- Tadami Town Folklore Meetings (1999), Once Upon a Time in Tadami: Folklores of Tadami, Okuaizu, Tadami Town Folklore Meetings, Tadami Town, Fukushima Prefecture **(in Japanese)**

2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

The Tadami BR is characterized by the fact that the natural environment of the Tadami region and the traditional lifestyle of its people represent the very harmony between nature and humans, and that the Tadami BR aims to maintain and develop them in response to the changing times. The principles and objectives of the Tadami BR are not always fully understood by the residents in the Tadami BR area, and the process of implementation and coordination with the lives of the residents require a lot of time and effort when carrying out various BR-related activities. However, we believe that, by proactively seeking cooperation and participation of the residents in the implementation of the project instead of viewing the above-mentioned situation negatively, the residents will understand the objectives of the Tadami BR and the active cooperation and participation of the residents will be promoted. In addition, the conservation function in the transition area is basically carried out under the existing relevant laws and ordinances in accordance with the soft law system of the BR, but there are limits to regulations by such laws and ordinances. Furthermore, because of the traditional workflows of the related administrative agencies and their vertically segmented administrative system among agencies and departments, there are not many cases in which special consideration is given to the protection and conservation of the natural environment and biodiversity just because they are within the BR area. Therefore, Tadami Town has newly enacted “Ordinance to Protect Wild Fauna and Flora in Tadami Town” while reflecting requests from the local residents, and has taken measures to address these issues. Although the measures the town has taken are still insufficient, the conservation function in the Tadami BR area including the transition area has been improved. In the case of administrative measures, development activities or changes in resident practices that conflict with the principles and objectives of the Tadami BR, it is essential to continue to share information with stakeholders in and outside the BR area and to consult and collaborate with them to solve such issues.

2.4 Comment on the following matters of special interest in regard to this biosphere reserve: (Refer to other sections below where appropriate).

2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

Tadami Town formulated the 6th Tadami Town Development Promotion Plan in 2006, and has been promoting town development utilising the local characteristics, such as nature, history, culture, lifestyles and industries that have been handed down in the region, with the natural environment and natural resources represented by beech forests as its core. After the registration as a BR in 2014, Tadami Town newly formulated the 7th Tadami Town Development Promotion Plan, incorporating measures related to the three functions of the BR.

2.4.2 Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.

- As described in 2.2.4, Tadami Town, the main management body of the Tadami BR, has been working with the Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency, which holds jurisdiction over the national forests occupying approximately 70% of the total area of the Tadami BR, to enhance the protected forests of the national forests in the buffer zones. Furthermore, in the review of the Echigosanzan-Tadami Quasi-national Park (which covers approx. 41% of the total area of the Tadami BR) under the Natural Park Act in 2021, Tadami Town worked with the Nature Conservation Division of the Living Environment Department of Fukushima Prefecture and the Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency to expand the area of the Special Zone.

- In 2022, the Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency, the Fukushima Prefectural Minami-Aizu Construction Office, and Tadami Town started efforts to help conserve rare raptors in their projects by providing opportunities to share information on habitat situations of rare raptors (Golden eagles: *Aquila chrysaetos japonica*, and Mountain Hawk-Eagles: *Nisaetus nipalensis*) in the Tadami BR area.
- The construction of National Route 289 connecting Tadami Town, Fukushima Prefecture and the adjacent city of Sanjo, Niigata Prefecture is underway. In order to minimize impacts of this construction on the natural environment and biodiversity in the areas along the road, and to construct a road suitable as a connecting road that passes through the Tadami BR area, the Tadami Biosphere Reserve Governance Board, the Ministry of Land, Infrastructure, Transport and Tourism, and the Fukushima Prefectural Civil Engineering Office have been discussing and examining such impacts as pending issues with Tadami Town as the point of contact. Furthermore, discussions and examinations will be conducted to determine measures to be taken for road management after its opening to ensure that the road will not adversely affect the natural environment and the growth and habitat of wildlife along the road, and that it will not threaten the environment where traditional and sustainable forest resources of the residents based on the right of common can be utilized.

2.4.3 Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc. How are they involved?

- Groups of local residents such as the local district heads' association and women's associations have participated in the "Tadami Biosphere Reserve Governance Board," which aims at liaison, coordination and problem solving among organisations and groups related to the Tadami BR, since its establishment.
- The local residents participate directly or indirectly in UNESCO Biosphere Reserve related projects implemented by Tadami Town. For example, such participants include wild fauna and flora observers based on the "Ordinance to Protect Wild Fauna and Flora in Tadami Town", residents' participation in the development of the "Tadami Observation Forest", and producers of products in the "'Tadami, the Capital of Mother Nature' traditional products" branding project.

2.4.4 Women's roles. Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a "gender impact assessment" carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex.

- No gender impact assessment has been conducted in the Tadami BR.
- Women's associations from three districts participate in the "Tadami Biosphere Reserve Governance Board" and they are incorporated into the decision-making process for the management and operation of the BR.
- Women's association from each district cooperate for and support traditional events in Tadami Town, settlements, etc. Such cooperation and support by the women's associations play an important role in the continuation of traditional events.
- The 7th Tadami Town Development Promotion Plan (formulated in 2016), the latest comprehensive regional plan in Tadami Town, which is the main body of the Tadami BR, has no special plan for gender equality, but the "Tadami Town Gender Equality Plan" was formulated in 2018.
- The percentage of female regular employees in the Tadami Town Office is approximately 39% (40 out of 102 people, as of 2022). The percentage increased by approximately 5% from 2017.

- Tadami Town Council has no female members (as of 2023).
- There are 27 settlements in the Tadami BR area, and each settlement has a district head. The district heads are responsible for summarizing opinions of the settlements and leading the management of the settlements. The percentage of female district head is approximately 4% (1 out of 27 settlements, as of 2023), and the majority of the district heads are male, but opinions of women in the settlements are reflected in the settlement management, etc. through the district heads.
- Although there are no official statistics on the employment of men and women, it appears that the percentage of women who work part-time or as other non-regular workers is higher than that of men. In many cases, women are in charge of managing the household budget, and it is rare for men to exclusively manage the household budget.
- It cannot be said that women have many opportunities to be involved in the decision-making process in local communities in the Tadami BR, and it is necessary for each community to further promote greater awareness of gender equality and to make concrete measures.

2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

[Core Area]

In the core area (3,557 ha, covering approximately 4.6% of the total area of the Tadami BR), nivation landforms are formed by avalanches, and the landscape is dominated by mosaic distribution of bare land, patches of plants or shrubs (vegetation on scree slopes), shrubs and beech forests. The area accords with the Preservation Zone of the Oku-Aizu Forest Ecosystem Reserve established and managed under the Act Concerning Utilization of National Forest Land for the purpose of maintaining the natural environment, protecting animals and plants, conserving genetic resources, and contributing to scientific research. The Preservation Zone of the Oku-Aizu Forest Ecosystem Reserve is generally off-limits to ensure strict protection of the forest ecosystem by eliminating any human influence; it is based on the principle of management of the Oku-Aizu Forest Ecosystem Reserve setting policy. Moreover, the core area, as an area which requires conservation of scenery and vegetation, is designated as a Special Protection Zone and a Class I Special Zone of the Echigosanzan-Tadami Quasi-national Park based on the Natural Park Act. A part of the core area is designated as the Tadami Prefectural Wildlife Protection Area and the Tadami Special Protection Area; these zones are based on the Wildlife Protection and Appropriate Hunting Law, which allows no hunting nor any human work activities such as cutting trees and bamboos, as well as restricts any extended new constructions. These restrictions have not changed since the time of application for registration. Therefore, the core area is managed to strictly protect the primeval forest ecosystem of the Tadami BR and reserve the ecological characteristics of the forests (Photo 2-6).



Photo 2-6 Landscape of the core area of Tadami BR (overlooking Mt. Maruyamadake from the summit of Mt. Aizu-Asahidake)

[Buffer Zone]

- The buffer zone is set to surround the core area as a buffer area to strictly protect the core area. With the presence of the mountainous landscape and wildlife habitats in a heavy-snow area, the buffer zone of the Tadami BR is a valuable area for the conservation of the local biodiversity, and is designated as the Conservation and Utilisation Zone of the Oku-Aizu Forest Ecosystem Reserve based on the Act Concerning Utilization of National Forest Land, and as the Special Protection Zone, the Class I Special Zone, the Class II Special Zone and the Class III Special Zone of the Echigosan-zan-Tadami Quasi-national Park based on the Natural Park Act. Furthermore, in the buffer zone of the Tadami BR area, in addition to the protection and conservation of the natural environment and biodiversity, sustainable utilisation of natural resources has been promoted through traditional common practices (including the System of Common Use of National Forest Land), and ecotourism, education and study activities have been utilized without disturbing the conservation of the natural environment.
- In 2017, the Kanto Regional Forest Office of the Forestry Agency removed the designation of “Hometown Forest,” a protected forest based on the Act Concerning Utilization of National Forest Land, which was set in the “Blessed Forest” (469.98 ha) located in the buffer zone in the northeastern part of the Tadami BR, in accordance with the revision of the protected forest system. In 2022, the “Blessed Forest” and the surrounding national forests (1707.14 ha in total) were newly incorporated into the Protected Forest “Conservation and Utilisation Zone of the Oku-Aizu Forest Ecosystem Reserve” to ensure the expansion and continuity of the protected area.
- In 2021, Fukushima Prefecture, following the review of the Echigosan-zan-Tadami Quasi-national park under the Natural Park Act, designated the “Numa-no-daira area” (138 ha) located in the northwestern part of the Tadami BR and “Mt. Gamoudake area” (119 ha, Figure 2-3; Photo 2-7) located in the northern part of the Tadami BR as the Special Zone of the Park. As a result, the area of the buffer zone of the Tadami BR increased by 119 ha (The area of the “Numa-no-daira area” (138 ha) is not included because it has been included in the buffer zone since before).

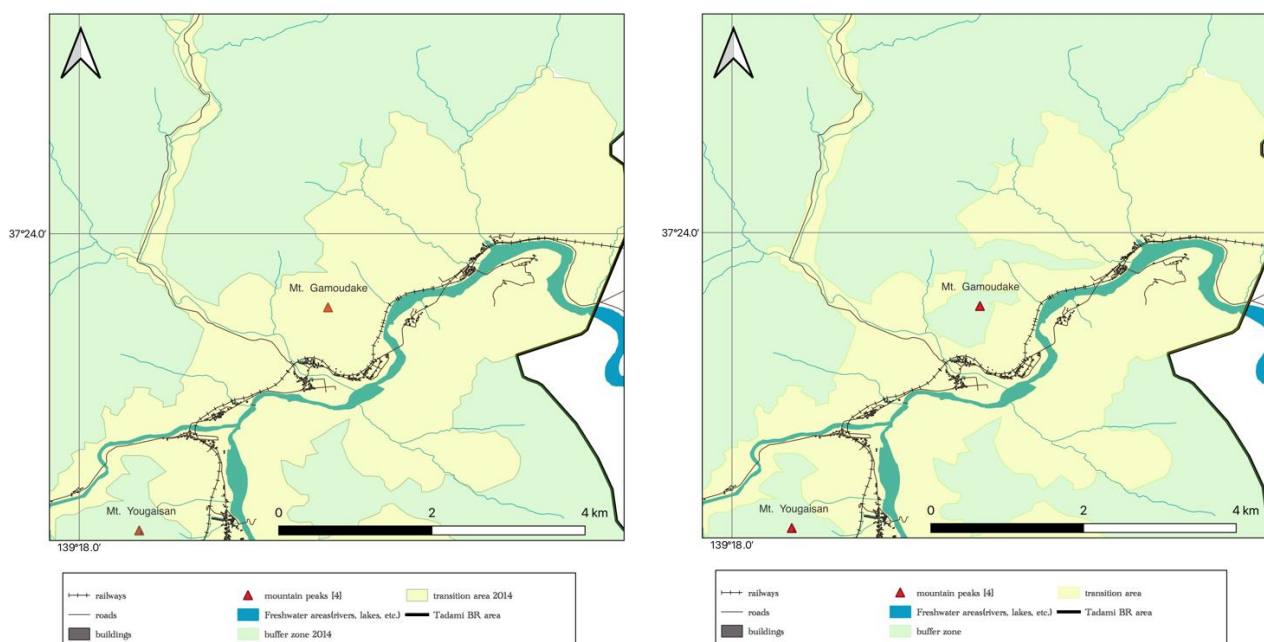


Figure 2-3 Zoning of the Mt. Gamoudake area and the surrounding area at the time of the designation of Tadami BR (2014, left) and after the change (right)



Photo 2-7 Mt. Gamoudake (828 m a.s.l.) and the surrounding area (119 ha), which were newly designated as a buffer zone

2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

- In order to conserve the habitat of raptors, which are rare species of wild fauna and flora, the Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency commissioned an organisation with knowledge of the ecology and research of raptors, etc. to conduct research on raptors living in the national forests of the Minami-Aizu district including the Tadami BR to understand their habitat and breeding situations. The results of the research have been reflected in the implementation of national forestry projects.
- In the Tadami BR area, investigation research and basic research on natural environment and social culture subsidised by “‘The Capital of Mother Nature’: An academic investigation research subsidy project” implemented by Tadami Town have been conducted. For details, refer to 6.1 and 6.2.
- Among the cool-temperate deciduous broad-leaved forests (beech forests) in Japan, Shirakami-Sanchi, which straddles Akita and Aomori Prefectures, has been designated as a UNESCO World Natural Heritage Site. For the purpose of protecting and conserving a natural environment like this, an expansion plan has been explored led by the Ministry of the Environment, and the Oku-Aizu area including the Tadami BR and the adjacent area around Mt. Tanigawadake in Gumma Prefecture have been considered and investigated as the target areas.

2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

- Generally, the “Tadami Biosphere Reserve Governance Board” has strengthened cooperation among its 23 members through liaison and coordination for proper management and operation of the Tadami BR. In addition, efforts have been made to resolve professional issues related to the management and operation based on advice and recommendations of the Tadami Biosphere Reserve Contributing Board.

2.4.8. Please provide some additional information about the interaction between the three zones.

Nothing in particular

2.4.9 Participation of young people. How were young people involved in the organizations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

- In the Tadami BR area, the population of young residents is small due to depopulation and aging of the population. Therefore, there are few groups organized mainly by the young generation, and groups organized by young residents do not participate in the Tadami Biosphere Reserve Governance Board. There are few opportunities for the opinions of young residents to be reflected in the BR activities.
- On the other hand, the core organisations of the Tadami Biosphere Reserve Governance Board, such as the Tadami Town Office and the Beech Center, have a relatively large number of young people (in their 20s and 30s) who are in charge of the town administration, so they cooperate with each other for the promotion of the BR.

- When the Tadami BR was first registered, a study group of young staff members was established to develop BR-related projects and propose them to the town executives. The proposed projects were incorporated into the Tadami Town BR Implementation Plan and some of them were realised.

3. ECOSYSTEM SERVICES:

3.1 If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

(As per previous report and with reference to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (<http://millenniumassessment.org/en/Framework.html> and <http://www.teebweb.org/publications/teeb-study-reports/foundations/>)).

<Provisioning Services>

- Abundant water resources nurtured by the heavy snowfall environment are important as drinking water for the residents in the Tadami BR area (residents of Tadami Town), and for irrigation for agricultural lands. Furthermore, electricity generated by hydroelectric power generation is supplied to the Kanto region and used to support urban infrastructure, and the power generation company earns profits from the sale and purchase of electricity.
- The forest ecosystem including beech forests provides bird and animal meat, edible wild plants, mushrooms and fruits for food, firewood for fuel, trees and herbaceous plants to be used as materials for traditional weaving handiwork, trees and herbaceous plants for dyes, honey plants for beekeeping, and trees and herbaceous plants for folk medicine. The residents in the Tadami BR area (residents of Tadami Town), visitors, and outside residents who purchase the products delivered from this area receive these supplies. As for coniferous planted forests of Japanese cedars (*Cryptmeria japonica*), Japanese larches (*Larix kaempferi*), etc., an industry to process such trees and provide forest products through wood production will also be developed.
- The forest ecosystem including natural beech forests, mountainous landforms, lakes and marshes, and rivers in the Tadami BR area form an excellent natural landscape, and provide opportunities for outdoor activities and recreation, such as mountain climbing and hiking, for residents in and outside the BR area.
- The river ecosystem provides freshwater fish and other inland water resources as food, which are consumed by the residents in the Tadami BR area (residents of Tadami Town) and received by visitors, and outside residents who purchase the products delivered from this area. In addition, it also provides opportunities for recreational fishing of mountain stream fish such as Japanese char.

The agroecosystem maintains the diet of the residents in the Tadami BR area (residents of Tadami Town) through production of agricultural products, and the sale of these products provide economic profits.

<Regulating Services>

- The forest ecosystem including beech forests provides regulating services, such as regulation of climate, control of soil erosion, water quantity control, local disaster mitigation, water purification, air purification and maintenance of soil fertility to the residents in the Tadami BR area (residents of Tadami Town), visitors, and residents in areas around the Tadami BR.
- The river ecosystem and the adjacent riparian ecosystem provide local disaster mitigation to the residents in the Tadami BR area (residents of Tadami Town), visitors, and residents in areas around the Tadami BR.

- The environmentally friendly agroecosystem provides biological control services such as pollination, as well as flood control and sediment runoff prevention in rice paddy fields, and the residents in the Tadami BR area (residents of Tadami Town) and visitors receive benefits from these services.

<Supporting Services>

- The soil formation, cycle of nutrient salts and primary production by autotrophs such as plants maintain the healthy natural ecosystem of the Tadami BR area and are essential to provide the ecosystem services. The benefits are received by the residents in the Tadami BR area (residents of Tadami Town), visitors and residents in areas around the Tadami BR.

<Cultural Services>

- Information on such traditional skills as weaving using trees and herbaceous plants that have been practiced indoors in the winter (agricultural off-season due to heavy snowfall), traditional food preservation methods such as dried Osmund (*O. japonica*), Izushi of minnow (Japanese dace: *Tribolodon hakonensis*), annual events like the Saotome dance and Onbe (New Year's bonfire), trekking and Eco-tourism, discovery of scientific knowledge by investigation and research, environmental education, etc. are received by the residents in the Tadami BR area (residents of Tadami Town), visitors and people related to the Tadami BR (including those related to the BR via the Internet, etc.) through field trips, experiences and museum facilities (such as Tadami Beech and River Museum, Tagokura Heritage Center, Tadami Museum of Folklore and History, and "Residence of the Hasebe Family (Kanozu guardhouse site)").

3.2 Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

At present, the indicators of ecosystem services used to evaluate the three functions (conservation, development and logistic) of the BR have not been examined and determined. Using the indicators listed in Table 3-1 below as a basis for discussion, the Tadami Biosphere Reserve Governance Board will examine and determine indicators based on the opinions of the Tadami Biosphere Reserve Contributing Board.

Table 3-1 Indicators of ecosystem services used to evaluate the three functions (conservation, development and logistic) in Tadami BR (draft)

Functions of BR	Category of ecosystem services	Indicators
Conservation	Regulating	Area of Oku-Aizu Forest Ecosystem Reserve
	Regulating	Area of Echigosanzan-Tadami Quasi-national Park
	Regulating	Number of protected rivers
	Regulating	Area of riparian forests including <i>S. hukaoana</i>
	Regulating	Number of national, prefectural and town natural monument
	Cultural	Number of species and individual big trees and giant trees
	Provisioning · Cultural	Area of traditional land use based on the right of common
Development	Provisioning	Designated number and designated area of Tadami Observation Forest

	Provisioning	Number of “traditional products of ‘Tadami, the Capital of Mother Nature’”, number of their producers, and value of production
	Provisioning	Production volume of edible wild plants collected under the right of common
	Provisioning	Production volume of mushrooms collected under the right of common
	Provisioning	Production volume and value of rice
	Provisioning	Number of species of local agricultural products (e.g., Kenji eggplant, and buckwheat)
	Cultural	Designated number and designated area of “Tadami Heavy Snowfall Forestry Experience and Observation Forest”
	Provisioning	Production volume and value of wood
	Provisioning	Production volume and value of firewood
	Provisioning	Production volume and value of honey
	Provisioning	Number of kinds of honey
	Cultural	Production volume of alcoholic beverages
	Cultural	Number of participants in eco-tours
	Cultural	Number of people accepted to stay at farmhouse accommodations
	Provisioning	Number of people accepted at educational institutions, etc. for practical training
	Cultural	Number of locations subjected to landscape improvement
	Provisioning	Number of plant species used for traditional weaving handiwork
	Provisioning	Production value of traditional weaving handiwork
	Cultural	Number of recreational fishermen
	Provisioning	Catch of freshwater fish
	Provisioning	Number of species of edible wild plants and mushrooms for which restrictions of distribution by the national government have been cancelled
	Provisioning	Number of species of wild birds and animals for which restrictions of consumption by the national government have been cancelled
	Provisioning	Number of species of wild birds and animals for which the request from Fukushima Prefecture to refrain voluntarily from self-consumption has been cancelled
Logistic	Cultural	Number of research subsidised by “‘The Capital of Mother Nature’: An academic investigation research subsidy project”
	Cultural	Number of basic research on natural environment and social culture
	Cultural	Number of academic papers published on Tadami BR
	Cultural	Number of publications such as academic research reports on Tadami BR
	Cultural	Number of BR-related events (exchange meetings, study groups, workshops, etc.)
	Cultural	Number of Tadami Town official nature guides
	Cultural	Number of museum facilities
	Cultural	Number of users of museum facilities
	Cultural	Amount of edible wild plants and mushrooms consumed by households

3.3 Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

- Edible wild plants:
Osmund (*Osmunda japonica*), bracken (*Pteridium aquilinum*), Ostrich fern (*Matteuccia struthiopteris*), *Urtica thunbergiana*, daylily (*Hosta montana*), udo (*Aralia cordata*), Japanese butterburs (*Petasites japonicus*), Japanese angelica tree (*Aralia elata*), red pepper (*Gamblea innovans*), *Eleutherococcus sciadophylloides*, Kalopanax (*Kalopanax septemlobus*), greenbrier (*Smilax riparia*), Asteraceae flowering plant (*Parasenecio delphiniifolius*), *Elatostema umbellatum* var. *majus*, Water dropworts (*Oenanthe javanica*), Japanese honewort (*Oenanthe javanica*), wasabi (*Wasabia japonica*), wild rocambole (*Allium macrostemon*), bamboo shoots of *Sasa kurinensis*, Japanese mugwort (*Artemisia indica* var. *maximowiczii*), Japanese pepper (*Zanthoxylum piperitum*), etc.
- Fruits:
Japanese chestnut (*Castanea crenata*), Japanese walnut (*Juglans mandshurica* var. *sieboldiana*), Heartnut tree (*J. mandshurica* var. *cordiformis*), Japanese horse chestnut (*Aesculus turbinata*), wild vine (*Vitis coignetiae*), silver vine (*Actinidia polygama*), hardy kiwi (*Actinidia arguta*), Japanese mulberry (*Morus australis*), *Akebia trifoliata*, white angel (*Malus Tschonoskii*), etc.
- Mushrooms:
Matsutake mushrooms (*Tricholoma matsutake*), Maitake mushrooms (*Grifola frondosa*), Nameko mushrooms (*Pholiota microspora*), honey mushrooms (*Armillaria mellea* subsp. *Nipponica*), Shimeji mushrooms (*Lyophyllum shimeji*), *Mycoleptonoides aitchisonii*, *Sarcodon aspratus*, *Sarcomyxa serotina*, Jew's ear mushrooms (*Auricularia auricula-judae*), *Meripilus giganteus*, Brick Cap mushroom (*Hypholoma sublateritium*), Chicken mushrooms (*Laetiporus sulphureus*), *Amanita hemibapha*, *Climacodon septentrionalis*, *Hygrophorus russula*, etc.
- Materials for weaving:
The vine of Silver vine (*Actinidia polygama*), *Akebia trifoliata*, *Clematis apiifolia* var. *biternata*, tree bark of Japanese walnut (*J. mandshurica* var. *sieboldiana*), wild vine (*V. coignetiae*), trunks of Japanese sumac (*Toxicodendron trichocarpum*), grass tree of *Carex dolichostachya*, *Boehmeria silvestrii*, etc.
- Honey source plants for honey beekeeping:
Japanese chestnut (*C. crenata*), Japanese horse chestnut (*Aesculus turbinata*), *Tilia maximowicziana*, *Kalopanax septemlobus*, *Malus tschonoskii*, etc.
- Plants used as dyes:
Japanese beech (*Fagus crenata*), Japanese walnut (*J. mandshurica* var. *sieboldiana*), Japanese mugwort (*Artemisia indica* var. *maximowiczii*), etc.
- Trees as materials for woodworking:
Japanese beech (*F. crenata*), Japanese zelkova (*Zelkova serrata*), Japanese horse chestnut (*Aesculus turbinata*), amur Corktree (*Phellodendron amurense* var. *amurense*), Japanese big-leaved magnolia (*Magnolia obovate*), *Lindera umbellata* var. *membranacea*, etc.

- Bird and animal meat:
Japanese black bear (*Ursus thibetanus japonicus*), Japanese Sika deer (*Cervus nippon*), Japanese wild boar (*Sus scrofa leucomystax*), Japanese hare (*Lepus brachyurus angustidens*), Copper pheasant (*Syrnaticus soemmerringii*), Mallard (*Anas platyrhynchos*), Mamushi (*Gloydius blomhoffii*), etc.
- Food fish:
Japanese char (*Salvelinus leucomaenis pluvius*), landlocked salmon (*Oncorhynchus masou*), Japanese dace (*Tribolodon hakonensis*)



Photo 3-1 Edible wild plants, mushrooms and freshwater fish obtained from forested mountains and fields are consumed at the tables of households, and also served as meals for visitors at accommodations and restaurants

3.4 Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

Before the Tadami BR was registered as a BR, the Forestry and Forest Products Research Institute of the Incorporated Administrative Agency conducted research to develop a method to comprehensively assess the use of various ecosystem services in village-vicinity mountains using indicators and economic measures in response to the tenth meeting of the Conference of the Parties (COP10) to the Convention on Biological Diversity (CBD) in 2010, and assessed the ecosystem services in the Tadami BR area. However, no assessment of ecosystem services has been conducted after the registration as a BR.

4. THE CONSERVATION FUNCTION:

[This refers to programmes that seek to protect biodiversity at landscape and site levels and/or ecological functions that provide ecosystem goods and services in the biosphere reserve. While actions to address this function might be focused on core area(s) and buffer zone(s), ecosystem dynamics occur across a range of spatial and temporal scales throughout the biosphere reserve and beyond.]

4.1 Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

No significant changes were observed in the ecosystems of the core area and most of the buffer zone. On the other hand, some changes in the ecosystems were observed in some part of the buffer zone and transition area due to activities of local residents to utilize forest resources and development activities. Development projects are planned and implemented from a short-term perspective to protect the lives of local residents from natural disasters and industrial activities for improvement of local infrastructure and regional revitalisation to avoid the decline of local communities due to depopulation and aging. Tadami Town, the main management body of the Tadami BR, and other related organisations have taken all possible measures and made efforts to cope with these changes. In the future, this type of project will be required to conduct multifaceted assessment of impacts of development activities on ecosystems and biodiversity from the planning stage and from a long-term perspective that transcends generations, even in depopulated and aging local communities.

The changes in the ecosystems that occurred during this period in the buffer zone and the transition area, their backgrounds and countermeasures are described below.

[Damage due to Japanese oak wilt in secondary forests of deciduous broad-leaved trees (Japanese oak forests) (in the buffer zone and the transition area)]

Around 2010, wilt disease of Fagaceae trees (commonly known as Japanese oak wilt) invaded into the Tadami BR area from adjacent Niigata Prefecture through National Route 289, Hachijuri Mountain Road and National Route 252, Rokujuri Mountain Road that pass through the northwestern and western parts of the Tadami BR. The damaged trees were mainly Japanese oaks (*Q. crispula* var. *crispula*) growing in natural forests and Japanese oaks (*Q. crispula* var. *crispula*) and Konara Oaks (*Q. serrata*) growing in former copses for firewood and charcoal. The invaded Japanese oak wilt expanded from the western part to the eastern part of the Tadami BR along the Tadami and Ina Rivers, and reached the eastern end in 2021 (Photo 4-1; Figure 4-1). Many Japanese oaks (*Q. crispula* var. *crispula*) and Konara Oaks (*Q. serrata*) were withered and damaged due to this damage, but no significant impact on the local biodiversity has not been observed. Although some adverse impacts on the natural landscape have been observed, there have been no apparent changes in the regulating and supporting services for ecosystems.

As countermeasures to mitigate the damage, Tadami Town has been injecting germicide for *Raffaelea quercivora* into trunks, and the Minami-Aizu branch office of Aizu District Forest Office of Kanto Regional Forest Office and Tadami Town have been installing decoy logs to attract and kill *Platypus quercivorus*, which carry *Raffaelea quercivora*, but the fundamental countermeasure against the damage due to Japanese oak wilt is to cut down the trees before their diameters become large and utilize them (Photo 4-2).

It is necessary to continue to carefully observe the trend of Japanese oak wilt and monitor its impact on the ecosystems. The Japanese oak wilt itself is a natural phenomenon, but its expansion can be attributed to the discontinuation of the use of former copses for firewood and charcoal mainly composed of Japanese oaks. That is to say, possible causes include the fact that trees are not cut down in short cycles to be used as firewood and charcoal, and the sizes of standing trees have increased. In that sense, the decrease in the use of wood resources in human activities has also had a significant impact.



Photo 4-1 Damage due to Japanese oak wilt that reached the eastern end of the Tadami BR (Yanatori District) in 2021
(Crowns of damaged trees are withered and reddish brown.)

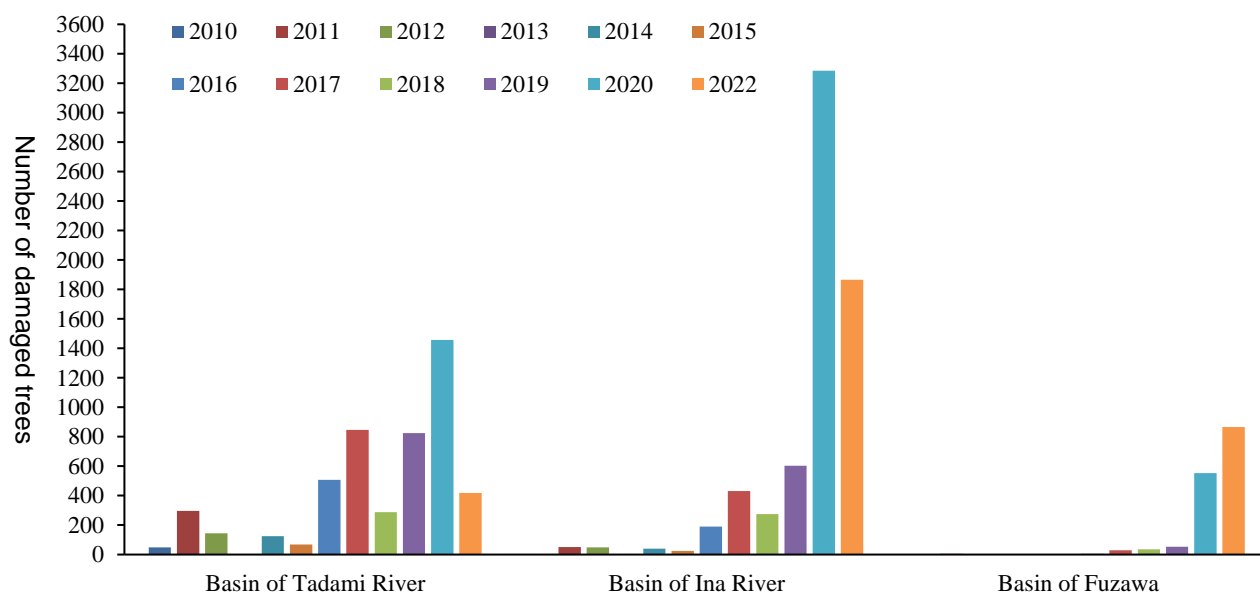


Figure 4-1 Changes in the number of damaged trees due to Japanese oak wilt (2010-2022) *Source: Tadami Beech Center survey data



Photo 4-2 Installation of decoy logs to attract and kill *Platypus quercivorus*

[Opening of national road through cool-temperate deciduous broad-leaved forest (beech forest) (in the buffer zone)]

National Route 289 is a 275-km long ordinary national road connecting Niigata City, Niigata Prefecture and Iwaki City, Fukushima Prefecture and running across the Tadami BR (Figure 4-2). Along National Route 289, there is an impassable section for automobiles (commonly known as National Route 289, Hachijuri Mountain Road) in the area including the northwestern part of the Tadami BR, and the Ministry of Land, Infrastructure, Transport and Tourism and Fukushima Prefecture have carried out the reconstruction and opening work since 1989, before the registration of the Tadami BR, with the aim of eliminating the impassable section and promoting interregional exchanges. The construction section in the Tadami BR (approximately 11 km in length) runs through the natural beech (*F. crenata*) forest in the buffer zone (designated as a Conservation and Utilisation Zone of the Oku-Aizu Forest Ecosystem Reserve and a Special Zone of the Echigosan-zan-Tadami Quasi-national Park), and this beech forest is one of the most natural forests in the Tadami BR area. However, the road site and related facilities were classified as a transition area at the time of the BR registration. At the beginning of the project, there was no system to give special consideration to the environment as described above. However, the Basic Act on the Environment enacted in 1993 mandated the implementation of environmental assessments, and in April 1997, the “Hachijuri Mountain Road Environmental Review Committee” composed of persons of learning and experience was established to examine specific environmental conservation measures for the construction of National Route 289, Hachijuri Mountain Road. Then, in June 1997, the Environmental Impact Assessment Act was enacted to establish procedures for environmental assessments for projects that may have a significant impact on the environment, such as large-scale public work projects, but the construction of National Route 289, Hachijuri Mountain Road is not a public work project of the scale that is required by the Act to undergo the environmental assessment.

During the interim review of the “Tadami Biosphere Reserve Management Plan,” which sets forth the basic policy for appropriate management and operation of the Tadami BR, the Tadami Biosphere Reserve Governance Board newly stipulated in the plan that it shall consider and implement an impact assessment of the opening of National Route 289, Hachijuri Mountain Road on the natural environment, the common practices of the local residents and the inland water

fishery rights, and measures against the impact. Furthermore, based on this, the Governance Board consulted the Tadami Biosphere Reserve Contributing Board on the impact and measures associated with the opening of National Route 289, Hachijuri Mountain Road. The Contributing Board conducted field surveys and interviews with local residents (Photo 4-3), prepared a report, and submitted it to the Governance Board. The summary of the report is as follows.

(Basic matters)

- The opening of National Road 289, Hachijuri Mountain Road is expected to contribute to improving the lives of the residents in the Tadami BR area, but there are concerns that it may have a serious impact on the natural ecosystems. In order for this road to lead to regional development in line with the principles of UNESCO Biosphere Reserve, it is desirable to eliminate the possibility of conflicts as much as possible at present to ensure that the road will be welcomed by all the residents who have diverse values.
- The Tadami Biosphere Reserve Governance Board and its members, who are the parties promoting the Tadami BR, are required to consider and implement all possible measures to resolve problems associated with the opening of Hachijuri Mountain Road. It is also expected that the responses to the issues associated with the opening of Hachijuri Mountain Road will be reported in the periodic reports, and that the information will be disseminated internationally as a model case for realizing harmony and coexistence between nature and human activities.

(Matters related to construction)

- Participation of local organisations in the environmental impact assessment organisation “Hachijuri Mountain Road Environmental Review Committee”
- Compliance with the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” established by Tadami Town during the construction of the road
- Ensuring a quiet breeding environment where rare raptors (Golden eagle: *A. chrysaetos japonica*, Mountain Hawk-Eagle: *N. nipalensis*, etc.) can continue to exist
- Ensuring migration corridors for wildlife (Photo 4-4)
- Preventing wildlife from being trapped in gutters
- Avoidance of adverse effects of running water containing snow melting agent on survival of amphibians
- Ensuring continuity of small mountain streams across the road
- Avoidance of impacts of road lighting on wildlife
- Conservation of water quality and stream environment for aquatic life
- Prevention of invasion by alien species
- Revegetation through natural restoration of vegetation (Photo 4-5)

(Matters related to road management and operation)

- Monitoring of wildlife inhabiting the areas around the road, and reflection of the results in the ways to manage and operate the road
- Continuation of exercise of the right of common by the local residents, and ensuring the environment for activities based on the right (Photo 4-6)
- Prevention of destruction and alteration of the natural environment by road users through strip roads, etc. along the road
- Ensuring limited-use parking spaces so that the common practices of the local residents, the rights of landowners, etc. in the areas around the road are protected

and others

Upon receiving the report, the Governance Board decided to address the issues presented in the report to the extent possible. In reality, construction of the road structures began even before the registration of the Tadami BR, and more than 30 years have already passed since the start of the construction. With most of the construction completed and the road scheduled to open around 2026, it is difficult to drastically change the construction plan, so the challenge is how to

realise the report of the Contributing Board. Even under these circumstances, Fukushima Prefecture and the Construction Work Office of the Ministry of Land, Infrastructure, Transport and Tourism, which are the main contractors, have announced that they will take all possible measures, such as implementation of monitoring and amphibian conservation measures, with the cooperation of Tadami Town, the Tadami Biosphere Reserve Governance Board, and the Tadami Biosphere Reserve Contributing Board in order to carry out construction work appropriate for the Tadami BR for future road construction, and are conducting field studies to resolve issues. On the other hand, it has not been decided at the present stage what kind of policy will be adopted to address issues expected to arise after the road comes into service, including the establishment of a place for discussion and coordination of measures to address such issues. On an individual basis, the Ihoku District Non-contribution Fishery Cooperative, which holds the inland water fishery right for the Kanozu River basin in which National Route 289, Hachijuri Mountain Road runs, is considering designating a protected river, a catch-and-release zone, and a monitoring system to prevent poaching with a view to the opening of the road.

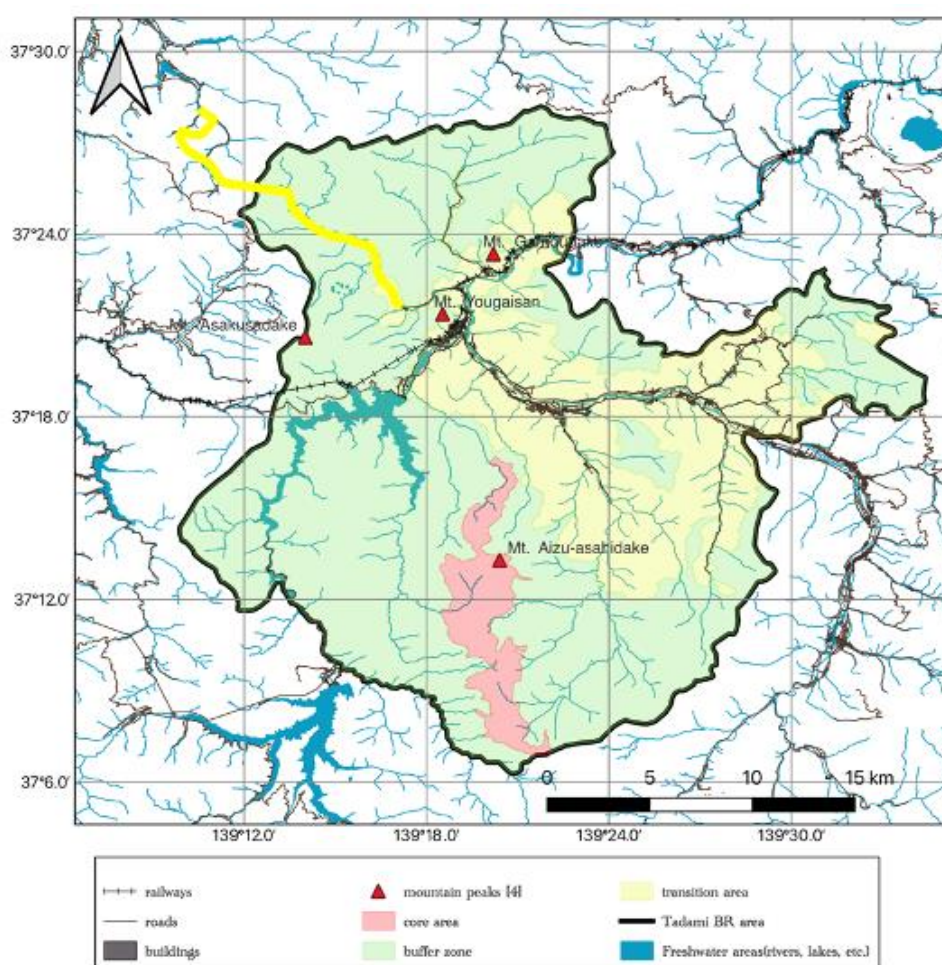


Figure 4-2 Location of National Route 289, Hachijuri Mountain Road (yellow line).



Photo 4-3 Members of Tadami Biosphere Reserve Contributing Board visiting the site of National Route 289, Hachijuri Mountain Road in August 2019



Photo 4-4 Japanese Sika deer (*C. nippon*) crossing National Route 289, Hachijuri Mountain Road in the evening. There is no migration corridor for wildlife on National Route 289, Hachijuri Mountain Road, so there are concerns about minor collisions between wildlife and motor vehicles and road-kill of wildlife by motor vehicles after the opening of the road. The Tadami Biosphere Reserve Contributing Board has proposed the installation of signboards to warn wildlife crossing and the reduction of motor vehicle driving speed.



Photo 4-5 Place for soil from tunnel excavation. Revegetation by planting Japanese beeches (*Fagus crenata*) from other areas was planned, but the Tadami Biosphere Reserve Contributing Board has proposed to prevent soil runoff by making the slope gentler and to use natural vegetation succession for revegetation.

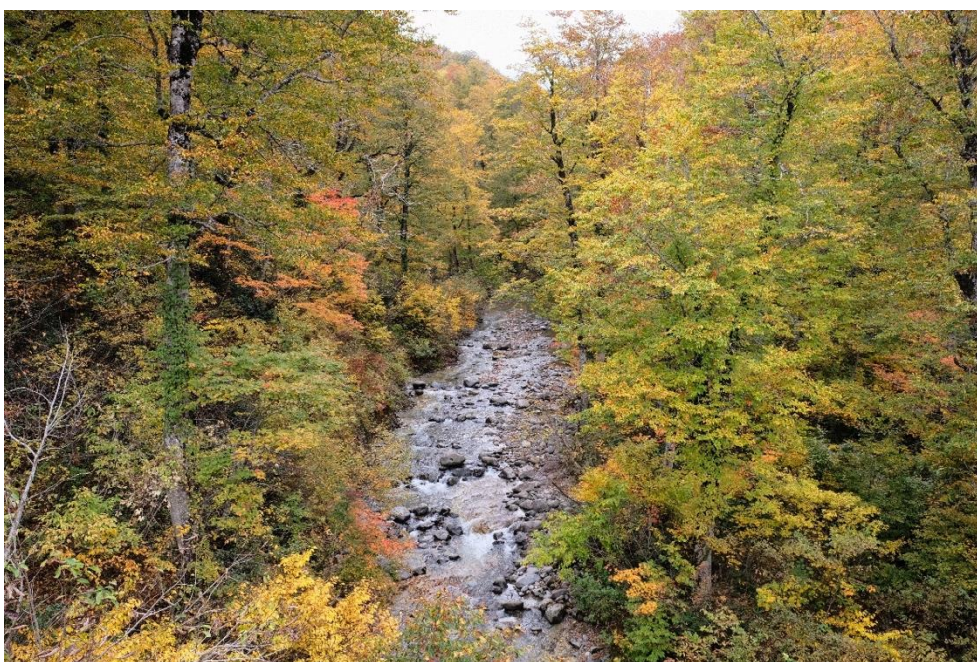


Photo 4-6 In the forests and fields along National Route 289, Hachijuri Mountain Road, traditional gathering of edible wild plants and mushrooms are conducted by the local residents exercising their rights of common. After the opening of the road, there is a concern that the environment for these activities will be damaged by road users from other areas entering the forests and fields. There are also concerns about adverse effects on freshwater fish resources due to unauthorised recreational fishing and overfishing. Before the opening of the road, the maintenance of road facilities and the establishment of a system for conservation by related parties is desirable so that the road may be opened as an ecological road that realises the coexistence between humans and nature.

[Changes in the river environment including mountainous riparian forests which are located along the main streams of the Ina and Tadami Rivers and their tributaries and where rare tree species *Salix hukaoana* grows (in the transition area)]

In the riparian areas (floodplains) of the basins of the Tadami and Ina Rivers in the Tadami BR, there are mountainous riparian forests dominated by trees of the genus *Salix*. These riparian forests are home to rare tree species *S. hukaoana* (Endangered II (VU) in the Red List of the Ministry of the Environment (2020)), and are part of one of the largest natural growth areas in Japan. Since natural disturbance systems such as flooding is required to maintain the populations of *S. hukaoana*, the presence of *S. hukaoana* indicates that the naturalness of the river environment of the basins of the Tadami River and the Ina River is high. On the other hand, the rivers in the basins of the Tadami River and the Ina River were swollen and flooded due to the Niigata and Fukushima heavy rainfall disaster in July 2011, and some of their riparian forests were also washed away. Furthermore, although river improvement was carried out after the disaster to protect the lives and property of the local residents in the basins, this river improvement was not carried out with sufficient consideration to the conservation of the riparian environment. As a result, the natural disturbance system required for renewal of *S. hukaoana* has been changed, which reduced the sizes of some populations and is threatening their survival (Photo 4-7, Tadami nature-study meeting 2012; Tadami nature-study meeting 2022). The “Tadami River Area River Improvement Plan (formulated by Fukushima, Niigata and Gumma Prefectures),” which stipulates specific matters related to the river improvement in these basins, states only that “efforts shall be made for the conservation to the extent that such efforts do not cause significant obstacles to river management” concerning the conservation of *S. hukaoana*. Moreover, the river channel and bed environments have become monotonous due to the river improvement after the Niigata and Fukushima heavy rainfall disaster in July 2011, and the river environment suitable for the freshwater fish habitat has decreased (Photo 4-8). In recent years, as the frequency of abnormal weather events such as torrential rain has increased, river management has become an issue to achieve both the overall protection of the river environment including riparian forests such as *S. hukaoana* in the basins of the Tadami River and the Ina River and the safety of the residents in the basins in the future. On the other hand, if *S. hukaoana* poses an obstacle to a small-scale project (e.g., maintenance of bridges or electric wires) conducted by Electric Power Development Co., Ltd., Tohoku Electric Power Co., Inc. or the like, whose business activities take place in the riparian areas of the basins of the Tadami River and the Ina River, the UNESCO Biosphere Reserve Promotion Section at the Tadami Town Office serves as a point of contact to discuss with the business operator about how to implement the project to protect and conserve *S. hukaoana* based on the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” (Photo 4-9).

<References>

- Tadami nature-study meeting (2012) Rare tree species, *Salix hukaoana*, in the Tadami River system of Fukushima Prefecture – Report on Its distribution and group conditions -. 80pp. Tadami nature-study meeting, Tadami **(in Japanese)**
- Tadami nature-study meeting (2022) Rare tree species, *Salix hukaoana*, in the Tadami River system of Fukushima Prefecture – Changes in their natural growth areas in Tadami Town before and after the Niigata and Fukushima heavy rainfall disaster in July 2011. 43pp. Tadami nature-study meeting, Tadami **(in Japanese)**



Photo 4-7 A new bank was constructed outside the existing bank during the river improvement after the Niigata and Fukushima heavy rainfall disaster in July 2011 (left bank, Okura). A riparian forest including *S. hukaoana* is confined within the bank, which is not affected by river disturbance. Since *S. hukaoana* depends on the river disturbance system for renewal, it is thought that the population here will be difficult to renew and will decay.



Photo 4-8 A revetment constructed during the river improvement after the Niigata and Fukushima heavy rainfall disaster in July 2011 (right bank, Kuratani). Local natural stones were embedded in the revetment to harmonize it with the surrounding landscape, but as a result, loose stones on the river bed, which provide habitat for freshwater fish and other species, were lost. In order to promote inland water fisheries that utilise the forces of nature to be described in 5.5-(7), river management that conserves an environment suitable for freshwater fish habitat.



Photo 4-9 Electric Power Development Co., Ltd. conducting a preliminary survey and considering measures for conservation of rare species together with the Tadami Town Office UNESCO Biosphere Reserve Promotion Section in the riparian forest (in the transition area) including *S. hukaoana*, which will be the site of the project. With the enactment of the ordinance, awareness of the conservation of the natural environment is taking root, especially among private companies.

[Establishment of sediment storage area in the basin of the Gamou River for disposal of dredged sediment from the dam lake (in the transition area)]

Sediment from upstream flows into and is deposited in the Taki Regulating Reservoir (in the Tadami BR area) located upstream of the Taki Dam (outside the Tadami BR area, completed in 1961, Figure 4-3), a hydroelectric dam that supplies electricity to the Tokyo metropolitan area. The dam management company, Electric Power Development Co., Ltd., dredges the deposited sediment and carries the dredged sediment out to a site within the Tadami BR area in order to prevent flooding damage due to rising flood levels caused by sediment deposition. Electric Power Development Co., Ltd. purchased the land of the tourist bracken (*Pteridium aquilinum*) garden (private land owned by a local resident) located on the river terrace upstream of the Gamou River, and has been constructing a dredged sediment storage area (area: approx. 40,300 m², sediment capacity: approx. 230,000 m³) since 2019 (Figures 4-3 and 4-4). The local settlement accepted the construction of the sediment storage area in the upper river basin in the settlement because it would prevent flood damage, forest roads would be constructed, and there would be no successors to use the land due to depopulation and ageing. On the other hand, endangered amphibians and plants listed in the Red Lists published by the national government and Fukushima Prefecture were living and growing at the planned site for the sediment storage area. Therefore, based on the “Ordinance to Protect Wild Fauna and Flora in Tadami Town,” Tadami Town asked the members of the Tadami Biosphere Reserve Contributing Board for their opinions, and requested Electric Power Development Co., Ltd. to protect and conserve endangered species, prevent alien species from invading and spreading, and take measures to prevent sediment runoff (Photos 4-10 and 4-11). Although the construction of the sediment storage area completed in 2023, Electric Power Development Co., Ltd. plans to expand the sediment storage area because it is necessary to continue to dredge sediment (Figure 4-3).

Tadami Town, which is responsible for the operation of the Tadami BR, understands that the deposition of sediment in the Taki Regulating Reservoir due to the presence of the dam is progressing, and thinks that the construction of the

sediment storage area is not a drastic measure but a temporary measure for the disposal of sediment from the dam, while the sediment dredging and disposal are necessary to ensure the safety of the local residents from natural disasters such as typhoons and torrential rain. Therefore, Tadami Town is requesting Electric Power Development Co., Ltd. to consider permanent measures against the sediment with a view to a sustainable future, and to deal with the construction of the temporary sediment storage area in accordance with the principles of the BR.

On the other hand, this issue began with the Tadami comprehensive development plan for specially designated area to supply electricity to Tokyo and other urban areas through hydroelectric power generation for post-war reconstruction, and the national government and Fukushima Prefecture promoted electric power development in Tadami Town. Although the dam construction under national policy brought economic benefits to the local communities in the basin, including the Tadami region for some time, it destroyed and altered the natural environment of the basin, and eliminated the traditional lifestyles and culture of the settlements that had to be relocated. The hydroelectric dam has such a historical background and, as described above, the dam lake is now facing new issues, such as concerns about new natural disasters, impacts on wild fauna and flora living and growing in and around the dredged sediment storage area, ecosystem, landscape and local industries, and problems of noise and CO₂ emission from large tipper lorries carrying sediment, as the amount of sediment deposited in the dam lake increases. In sharing such history and issues with the urban residents who receive benefits from electric power, it is necessary to realise comprehensive sediment management for sustainable development of the basin of the Tadami River including the Tadami BR with cooperation and collaboration of the electric power company, the national and prefectural governments, and local stakeholders.

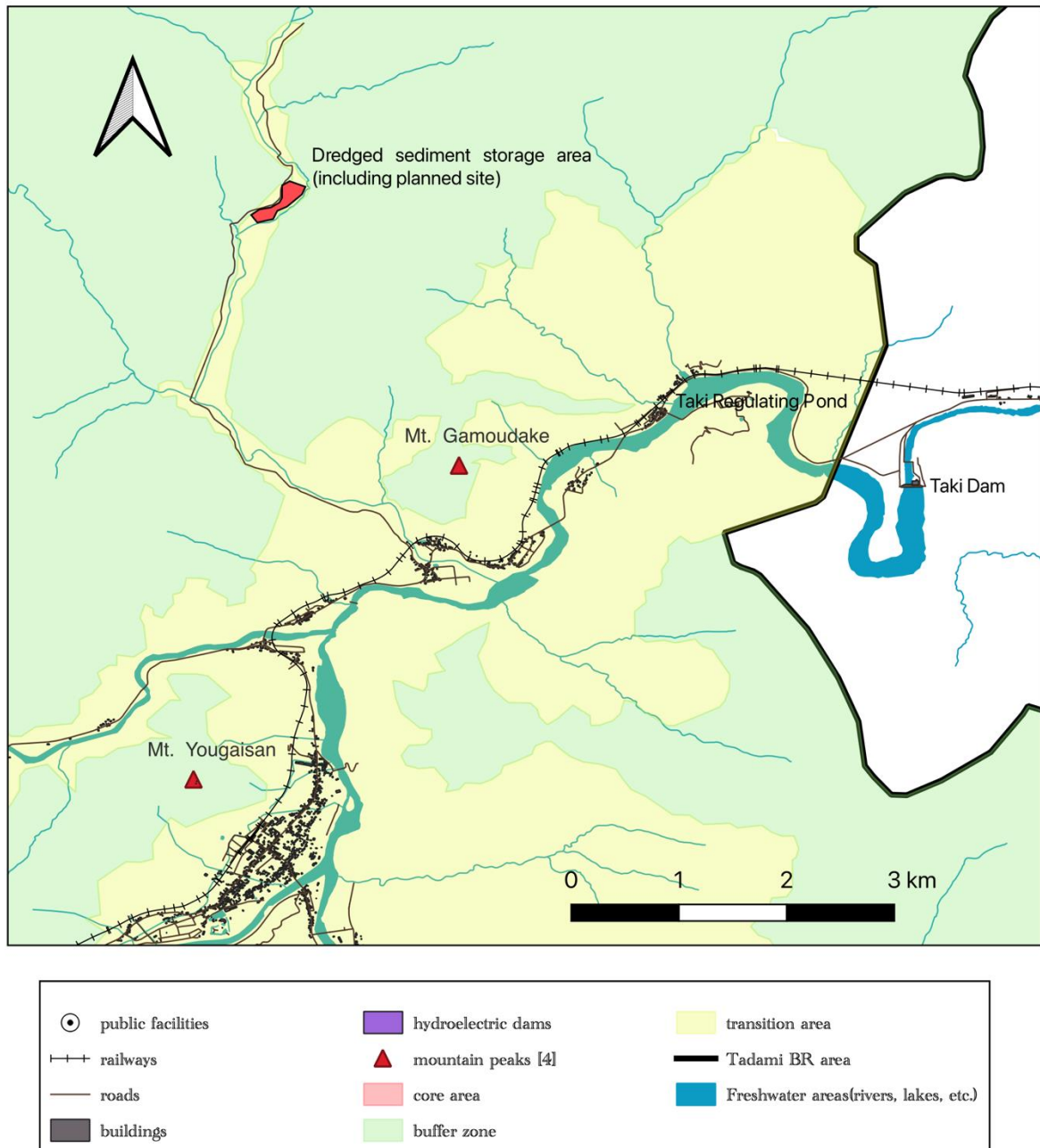


Figure 4-3 Locations of Taki Dam, Taki Regulating Reservoir, and Gamou Kitayama sediment storage area

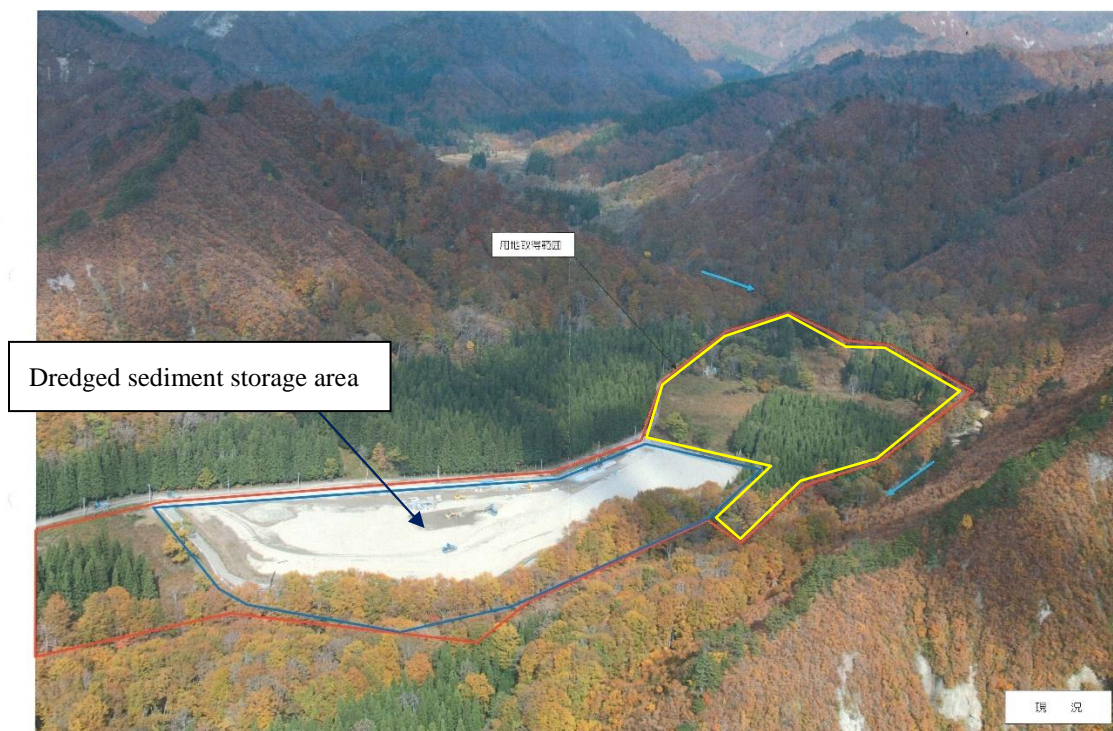


Figure 4-4 Overview of the dredged sediment storage area in the basin of the Gamou River in the northwestern part of the Tadami BR (Blue line: Area of existing sediment storage area, 400,290 m²; Yellow line: Area in which a new storage area is scheduled to be constructed from 2023, 56,647 m²). The construction of sediment storage areas further upstream or in other basins is also being considered.

(Source: Materials prepared by Tagokura Power Administration Office, East Regional Headquarters, Electric Power Development Co., Ltd.)



Photo 4-10 Conservation work by Electric Power Development Co., Ltd. for endangered species growing and living in the sediment storage area. Aquatic life such as branched bur-reeds (*Sparganium erectum*) and Japanese fire belly newts (*Cynops pyrrhogaster*) were transferred to an alternative pond to conserve them.



Photo 4-11 A ramp installed by Electric Power Development Co., Ltd. for small animals to crawl out of a gutter

[Large mammals with expanding distribution and population management]

Even in the Tadami BR located in a region with heavy snowfall, the snow accumulation has decreased due to effects of global warming, and large mammals such as Japanese Sika deer (*C. nippon*) and Japanese wild boars (*S. scrofa*) have moved in, increasing their populations in this area. On the other hand, the decrease in and ageing of the hunting population, as well as continued restriction on shipment of wild bird and animal meat as a result of the accident at Fukushima No.1 Nuclear Power Plant in 2011 have made it difficult to properly manage the populations of these wild animals. As a result, hunting pressure has become lower, leading an increase in the number of wild animals, and damage to agriculture and forestry is becoming apparent. The impact of wild animals on the natural ecosystem of the area has not yet become apparent, but there is a concern that they will have a significant impact in the future. While there is a need to protect and conserve wild animals, there is also a need to properly manage their populations. Therefore, efforts to manage the populations through trapping and other hunting methods have begun around settlements in the transition area.

[Invasion and spread of alien species (in the transition area)]

Cut-leaved coneflower (*Rudbeckia laciniata*) (designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species), tall goldenrod (*Solidago canadensis* var. *scabra*) (classified as “alien species for priority measures” on the list of alien species that may cause damage to ecosystems, etc. in Japan), and locust tree (*Robinia pseudoacacia*) (classified as “alien species for industrial control” on the list of alien species that may cause damage to ecosystems, etc. in Japan) have been introduced through

river improvements and other public works, and in recent years, have been rapidly expanding their distribution mainly in river zones (Photo 4-12).

As of 2017, there were 95 hectares of deserted arable land in the Tadami BR due to the reduction of the farming population caused by a lack of successors and an ageing of population (according to the summary of the situations of people and agricultural land in each municipality (Fukushima Prefecture, 2017)). The deserted arable land accounts for 11.6% of the agricultural land. In recent years, cut-leaved coneflower (*R. laciniata*) and tall goldenrod (*S. canadensis* var. *scabra*), which have escaped from the river zones, have invaded and established themselves in some part of such deserted arable land.



Photo 4-12 A large community of cut-leaved coneflower (*R. laciniata*) (yellow flowers on the river bank in the foreground) that has invaded and established itself on the left bank of the dam regulating reservoir (Tadami Lake), which is the site of Electric Power Development Co., Ltd. In 2022, it made an attempt to exterminate the plant by landfill, and its progress is currently being monitored. Moreover, seeds of cut-leaved coneflower are escaping through the river mainly to the Tadami district in the lower reaches of the river, and early extermination is required.

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones. Note their main goals and the scope of activities, e.g. biotic inventories, species-at-risk, landscape analyses, conservation stewardship actions. Cross reference to other sections below where appropriate.

[Conservation programmes by legal systems]

(1) Strengthening the conservation function by reviewing the existing legal systems (in the buffer zone)

- In 2017, the Kanto Regional Forest Office of the Forestry Agency abolished the recreational forest (100.4 ha) established in the “Numa-no-daira area” in the buffer zone in the northwestern part of the Tadami BR, and in 2018, incorporated it into the “Conservation and Utilisation Zone of Oku-Aizu Forest Ecosystem Reserve,” the Protected Forest under the Act Concerning Utilization of National Forest Land to expand the protected area. This measure has caused no change in the management classification of the BR.

- In 2017, the Kanto Regional Forest Office of the Forestry Agency removed the designation of the Protected Forest “Hometown Forest,” which was established in the “Blessed Forest (beech (*Fagus crenata*) forest)” (469.98 ha) within the buffer zone in the northeastern part of the Tadami BR, under the Act Concerning Utilization of National Forest Land, in accordance with the revision of the protected forest system. In response to this, Tadami Town requested the Minami-Aizu branch office of Aizu District Forest Office of Kanto Regional Forest Office to incorporate the “Blessed Forest” into the Protected Forest “Conservation and Utilisation Zone of Oku-Aizu Forest Ecosystem Reserve” in order to protect and conserve the local natural environment and to develop the local communities through sustainable use of local resources, based on the recognition that the promotion of regional development with the UNESCO Biosphere Reserve as its principle and the “Blessed Forest” are linked to the conservation of the basin environment and the regional development utilising the framework of the UNESCO Biosphere Reserve. In response to this request, the Kanto Regional Forest Office of the Forestry Agency incorporated the “Blessed Forest” and the surrounding national forests (1707.14 ha in total) into the Protected Forest “Conservation and Utilisation Zone of Oku-Aizu Forest Ecosystem Reserve” in 2022 to ensure the expansion and continuity of the protected area. This measure has caused no change in the management classification of the BR.
- In 2021, Fukushima Prefecture, following the review of the Echigosanzan-Tadami Quasi-national park under the Natural Park Act, designated the “Numa-no-daira area” (138 ha) located in the northwestern part of the Tadami BR and “Mt. Gamoudake area” (119 ha) located in the northern part of the Tadami BR as the Special Zones of the Park. As a result, the area of the buffer zone of the Tadami BR increased by 119 ha (The area of the “Numa-no-daira area” (138 ha) is not included because it has been included in the buffer zone since before).

(2) Enactment and operation of the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” (in the core area, buffer zone, and transition area)

In the Tadami BR, theft of rare wild plants and insect collecting using light traps with high light intensity mainly by visitors have become problems as they impair the biodiversity of the area. Furthermore, in the transition area of the Tadami BR, there was no legal system to protect and conserve the natural environment and biodiversity. Therefore, in June 2016, Tadami Town enacted the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” in order to realise the principles and objectives of the BR, with a principle that protecting and conserving the local natural environment and biodiversity lead to protection and development of the local communities. This ordinance applies within the area of Tadami Town, which accounts for approximately 96% of the area of the Tadami BR, and the transition area is included entirely in this area. Prior to the enactment of this ordinance, Tadami Town held several meetings to explain the proposed ordinance to the local residence. This ordinance stipulates that the Tadami Town Office, residents and business operators in Tadami Town, and visitors to Tadami Town shall strive to understand the value of the existence of wild fauna and flora that inhabit and grow in the town and to protect and conserve them. Specifically, the ordinance stipulates that they shall strive to protect and conserve the populations and habitats of species of wild fauna and flora inhabiting and growing in the town that are listed on the Red Lists published by the national government and Fukushima Prefecture. In addition to the species listed on the Red Lists, Tadami Town designated its own “Tadami Town-Designated Valuable Wild Fauna and Flora” after public comments from the residents of the town. The ordinance also prohibits insect collecting by light traps, and stipulates that violators shall be subject to a non-penal fine. Furthermore, the ordinance stipulates that the town commissions residents of the town with qualifications such as Tadami Town official nature guides to be “Tadami Town wild fauna and flora observers” who shall cooperate with the town in conducting patrols, providing guidance and advice for the protection and conservation of wild fauna and flora. In Japan, there are not many examples of such ordinances being enacted at the municipal level.

As a result of the operation of a series of these provisions of the ordinance, and efforts to disseminate information on the ordinance by installing banners and through the website, the number of reports of theft of valuable wild plants and use of light traps has decreased dramatically compared to that before the enactment of the ordinance. As for various development projects in the Tadami BR area, the Tadami Town Office UNESCO Biosphere Reserve Promotion Section is in charge of coordinating such projects so as to plan and implement projects that take into consideration the protection and conservation of wild fauna and flora in accordance with the ordinance.

[Conservation programmes by investigation and research]

Tadami Town established “‘The Capital of Mother Nature’: An academic investigation research subsidy project,” and has been providing subsidies to researchers who have conducted basic and applied research on conservation, regeneration and utilisation of biodiversity in Tadami Town since 2012 to the present. Through this subsidy project, research on biota in the Tadami BR, understanding of the ecology of endangered species and analysis of landscapes have been conducted (For details, refer to 6.1 and 6.2).

On the other hand, Tadami Town has been conducting its own basic research on the most recent issues that the Tadami BR and Tadami Town are facing. Generally, such research is conducted with the purpose of obtaining information on areas and rare species within the Tadami BR of which information is lacking, and in recent years, research on the habitat of wildlife (e.g., amphibians and raptors) has been conducted on and around National Route 289, Hachijuri Mountain Road, which is scheduled to open in the future. The scope of activities varies depending on the year and research theme (For details, refer to 6.1 and 6.2).

[Other conservation programmes]

- As the UNESCO Biosphere Reserve projects, Tadami Town has been conducting the protection and conservation of the natural environment and wild fauna and flora in the Tadami BR area, designation and maintenance of “Tadami Observation Forest” in which such natural environment and wild fauna and flora are used for education and training, protection of a group of giant trees of pollarded (Agariko-type) Konara Oak (*Q. serrata*), control of Japanese oak wilt, and conservation of wetlands.

(Designation and maintenance of “Tadami Observation Forest”)

Tadami Town has designated and maintained the “Tadami Observation Forest” (hereinafter referred to as “Observation Forest”) as part of the UNESCO Biosphere Reserve project, with the aim of protecting valuable natural environment and species that exist in the transition area and understanding the actual situations of the natural environment and wild fauna and flora in the Tadami BR area by getting familiar with them. Nine places, including a small area of beech forest in the transition area, were designated as the “Observation Forest,” and the minimum necessary maintenance was conducted with stakeholders from the local settlements (Photo 4-12). Rules for the use of the “Observation Forest” were established to prevent overuse, and with the understanding of the local residents, both conservation and sustainable use of the natural environment have been achieved.

○Designated places: (Total area: Approx. 16.45 ha)

Beech (*Fagus crenata*) forests (Narato <0.5 ha>, Shimofukui <1 ha>, Fukasawa <0.5 ha>, Sakata <2 ha>, Yanatori <4.75 ha>

Pollarded beech (*F. crenata*) forest (Managawa <0.5 ha>)

Salix hukaoana forests (Araihara <1 ha>, Sugisawa <2 ha>)

Pollarded Konara Oak (*Q. serrata*) forest (Kurosawa <4.2 ha>)



Photo 4-13 A beech forest in the Yanatori district (commonly known as Forest of Learning) was designated as the “Tadami Observation Forest” and maintained by the local residents and the Tadami Beech Center.

(Conservation of big trees and giant trees, and control of Japanese oak wilt)

- In the transition area of the Tadami BR, there is a group of giant trees of pollarded (Agariko-type) Konara Oaks (*Q. serrata*) that was formed by repeated cutting of sprouting trunks grown from coppicing surfaces and trunks logged on the snow in winter for the purpose of firewood production. This pollarded shape of Konara Oak (*Q. serrata*) is not common in Japan and was created by firewood and charcoal forestry as a result of natural regeneration through sprouting and on-snow logging in heavy snowfall regions such as the Tadami BR area, and is a historical asset showing one type of forest utilisation in this region. Tadami Town designated this forest as the Observation Forest and has opened it to the public. However, since around 2010, a part of the forest has been withered and damaged due to the mass withering of and damage to Japanese oaks caused by *Raffaelea quercivora* carried by *Platypus quercivorus*, which invaded the Tadami BR. Therefore, the Tadami Beech Center, an organisation of the Tadami Town Office, has been trying to conserve the pollarded Konara Oaks (*Q. serrata*) by injecting germicide for *Raffaelea quercivora* into them every other year since 2012 (Photo 4-14).



Photo 4-14 Staff members of the Tadami Beech Center and the Tadami Town Office UNESCO Biosphere Reserve Promotion Section injecting germicide into the trunk of a giant pollarded Konara Oak (*Q. serrata*) in the Kurosawa district

(Conservation of wetlands)

Wetlands, which are home to animals and plants that depend on wetlands for their growth as well as to many rare species, contribute greatly to the biodiversity of the region. The Oosone wetlands located in the transition area in the eastern part of the Tadami BR was designated as a natural monument of Tadami Town, and a wooden footpath for observation was installed in the wetlands, which made it easy for people to enter the wetlands, and has been one of the causes of destruction of the vegetation of the wetlands and theft of rare wild plants. Furthermore, the wooden footpath has decayed and sunk down, blocking the flow of water in the wetlands and causing the wetlands to dry up and the vegetation of the wetlands to decline.

Therefore, Tadami Town removed a part of the wooden footpath and restricted access to the wetlands to conserve the wetlands, and also developed surrounding walkways that allow visitors to observe the wetlands.

- At the annual opening of Mt. Asakusadake (buffer zone) and Mt. Aizu-Asahidake (core area and buffer zone) to climbers, the Minami-Aizu Development Bureau of Fukushima Prefecture hands out garbage bags to climbers and encourages them to take their garbage home, thereby raising awareness about the conservation of the natural environment.

4.3 In what ways are conservation activities linked to, or integrated with, sustainable development issues (e.g. stewardship for conservation on private lands used for other purposes)?

In 2016, after the registration of the Tadami BR, Tadami Town enacted the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” to strengthen the conservation function of the ecosystem in the Tadami BR area. As a result, efforts have been made to conserve the ecosystem during public works and business activities as described in 4.1.

4.4 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators used).

Tadami Town, which is the main management body of the Tadami BR, formulated an “Action Plan for the Promotion of Tadami Biosphere Reserve” based on the “Tadami Biosphere Reserve Management Plan” formulated by the Tadami Biosphere Reserve Governance Board, and has planned and implemented the following measures regarding the conservation function.

(1) Enactment and operation of the “Ordinance to Protect Wild Fauna and Flora in Tadami Town”

The details of the implementation and its effects are as described in 2.2.4 and 4.1. For evaluation of the effectiveness, the number of prohibited light traps of which use has been confirmed, and the number of species of wild fauna and flora or their habitats and growing environment that could be protected or conserved can be used. According to these data, it can be evaluated that the ordinance has led to enhancement of the conservation function of the Tadami BR, but there are many cases where this ordinance functions in a symptomatic manner. Therefore, it is necessary to understand the purpose of this ordinance and continue to disseminate this ordinance until voluntary and proactive conservation activities are conducted throughout the region, and also to take an approach that specifically shows the benefits that the local communities can gain through the conservation of the local natural environment and biodiversity.

(2) Environmental impact study and measures to be taken in the surrounding area of National Route 289, Hachijuri Mountain Road after its opening

The details are as described in “Opening of national road through cool-temperate deciduous broad-leaved forest (beech forest) (in the buffer zone)” in 4.1. Although the road facilities are being completed, it is necessary to investigate and implement conservation measures using road facilities to solve problems as much as possible in cooperation with stakeholders, with Tadami Town as a point of contact. In addition, the road is expected to have impacts on the surrounding natural environment and wild fauna and flora after its opening, so measures need to be considered as soon as possible. Furthermore, after the opening of the road, monitoring should be continued, and conservation measures should be strengthened as necessary. It is also necessary to analyse from multifaceted perspective how the new road affects the local communities in geographically isolated mountainous areas such as the Tadami BR by providing better

access to neighbouring larger towns. The impacts of the opening of the road on the surrounding environment and biodiversity can be evaluated using the following methods and indicators.

3) Natural beech forests

(Method) Tree census in fixed plots in natural beech forests

(Indicators) Diversity of standing trees species and forest stand structure

4) Rare raptors

(Method) Monitoring survey of rare raptor habitat, nesting and breeding

(Indicators) Frequency of observation of rare raptors, presence/absence of nesting, and presence/absence of breeding

5) Amphibians (salamanders)

(Method) Survey of egg-laying status

(Indicators) Number of species confirmed, and number of egg masses

6) Large mammals

(Method) Camera trap survey

(Indicators) Number of species confirmed, and number of times of photographing

7) Freshwater fishes

(Method) Environmental DNA survey

(Indicator) Number of species confirmed

8) Revegetation

(Method) Vegetation survey

(Indicators) Number of species, growth density, and size

9) Invasion of alien species

(Method) Field survey

(Indicators) Number of species, populations, and distribution range of alien species

10) Sustainable utilisation of forest resources by local residents

(Indicators) Number of contracts for common use of national forests with local residents, and contracted area

(3) Protection and conservation of high moors, lakes and marshes

There are several lakes, marshes and wetlands in the Tadami BR area, where rare and endangered species grow and live, increasing the biodiversity within the area. These species are protected and conserved by implementing protection and conservation measures in accordance with the laws and regulations, and the evaluation depends on the number and area of sites where such measures are implemented. Even before the registration of the BR, the Oosone wetlands, which is a high moor, was designated as a natural monument of Tadami Town, and the Numa-no-daira, where lakes and marshes are located, was classified as the Class I Special Zone of the Echigosanzan-Tadami Quasi-national Park based on the National Park Act. During the last ten years, the national forests around the Susaki Marsh with floating islands and the marshy land below Gonzaemon-daira (tentative name), which are located in the western part of the Tadami BR, were designated and protected as the Class III Special Zone of the Echigosanzan-Tadami Quasi-national Park based on the National Park Act (Photo 4-15). However, since the Class III Special Zone is an area with weaker protection regulations as compared with other special zones, it is desirable that protection measures, such as designating the wetland area as a natural monument of Tadami Town, should be taken. Moreover, the large marshy land in the Oyachi area of the Ota district in the eastern part of the Tadami BR has vegetation ranging from high moor to low moor. In particular, rare species such as *Rhynchospora alba* and *Nannophya pygmaea* have been confirmed in the large marshy land, making it an important wetland for the conservation of biodiversity. Therefore, possible measures to be taken

include designating it as a natural monument of the town. Rare wild fauna and flora, such as the giant water bug (*Kirkaldyia deyrolli*) (Endangered II (VU) in the Red List of the Ministry of the Environment (2020)) which is rarely confirmed in the Aizu region, have also been confirmed in agricultural irrigation ponds in the Fukui district, so it is necessary to conserve such environments when maintaining agricultural facilities.



Photo 4-15 Susaki Marsh with floating islands that was incorporated into the Class III Special Zone of the Echigosanzan-Tadami Quasi-national Park based on the Natural Park Act in 2021 (in the buffer zone). It is a habitat for rare wild fauna and flora including endangered species. During the heavy rainfall disaster in 2017, an adjacent strip road for the national forest collapsed, causing earth and sand flow into the Marsh, which affected the ecosystem. Furthermore, the strip road is connected to National Route 289, Hachijuri Mountain Road, which is scheduled to be opened to traffic, so there are also concerns about negative impacts on the natural environment by road users through the use of the strip road. Strengthening of conservation measures for the lakes and marshes and their surrounding environments is required.

(4) Protection and conservation of river environment

The details are as described in “Changes in the river environment including mountainous riparian forests which are located along the main streams of the Ina and Tadami Rivers and their tributaries and where rare tree species *Salix hukaoana* grows (in the transition area)” in 4.1. Indicators for evaluating the effectiveness of the protection and conservation of the river environment include the number and area of places where river improvements were newly conducted, changes in channel width, the population of mother trees of *S. hukaoana*, and the area of riparian forests containing *S. hukaoana*. The scientific correlation between these indicators needs to be made clear through future investigation and research. However, over the last decade, the number and area of places where river improvement were newly conducted has increased, the river width has been on a declining trend, and the population of mother trees of *S. hukaoana* and the area of riparian forests containing *S. hukaoana* have decreased, indicating that the highly natural river environments tend to be lost. Therefore, river administrators in particular need to take more effective measures to ensure both the protection and conservation of the river environment and the safety of the residents in the river basins.

(5) Protection and conservation of aquatic life

- Within the Tadami BR, amphibians such as frogs and toads, and salamanders are abundant in species and populations. In particular, the clawed salamander (*Onychodactylus*), which is locally distributed in the western part of the Tadami BR and parts of adjacent Niigata Prefecture, was described as a new species, Tadami clawed salamander (*Onychodactylus fuscus*) in 2014. The “Ordinance to Protect Wild Fauna and Flora in Tadami Town” designates these amphibians as species to be protected, and stipulates that their populations and habitats shall be protected and conserved.
- Most of the native Japanese char (*Salvelinus leucomaenis pluvius*), which were abundant in the Tadami region, have crossbred with farmed char, and the habitat areas of the remaining native Japanese char are very limited and they are on the verge of extinction in the Tadami region. Therefore, we are first conducting surveys to identify the rivers where the native Japanese char inhabits. Since there are many rivers in the Tadami BR (approx. 800 named rivers alone), it is difficult to identify the entire habitat area, and therefore, we need to prioritise surveys of specific basins. For this reason, we are currently conducting a survey of rivers in the basin of the Kanozu River along National Route 289, Hachijuri Mountain Road, which is scheduled to open in the future. We plan to protect the native Japanese char by identifying rivers that should be protected and designating protected rivers in cooperation with the local fishery cooperative, the Ihoku District Non-contribution Fishery Cooperative. Therefore, possible indicators for evaluating the effectiveness of the protection and conservation of the native Japanese char include the number of rivers designated as protected rivers, the length of the river channel, and the population density of the native Japanese char in the protected rivers.

(6) Protection and conservation of big trees and giant trees)

- There are many big trees and giant trees in the Tadami BR area. The presence of big trees and giant trees is an indicator of the high naturalness of the area and a symbol of the area. They are also expected to be utilised as a tourism resource. The Education Board of Tadami Town conducted a survey on actual conditions of big trees and giant trees in Tadami Town in 2004, followed by another survey conducted by the Tadami Beech Center in 2012. However, those surveys were conducted only in some areas of Tadami Town, and thus the full picture of the big trees and giant trees in Tadami Town has not been revealed. Furthermore, since the publication of the survey in 2004, some of the confirmed big trees and giant trees have been lost due to reasons such as old age and natural disasters. Therefore, a general survey is required for the protection and conservation of big trees and giant trees in the Tadami BR area. In addition, it is necessary to install signs and explanatory boards for visitors to the existing big trees and giant trees to promote conservation and utilisation of the trees. These surveys and maintenance have not yet been started, making them issues to be solved in the future. Furthermore, some of the giant trees in Tadami Town have been registered in the “Big Trees and Giant Trees” database of the Ministry of the Environment (<https://kyoju.biodic.go.jp/>), and we will consider reflecting the results of the resurvey in the database.
- As for giant trees of pollarded (Agariko-type) Konara Oak (*Q. serrata*), approximately 60 pollarded Konara Oak (*Q. serrata*) trees have been conserved through the control of Japanese oak wilt by the Tadami Beech Center and the designation as the “Tadami Observation Forest.” The details are as described in [Transition Area] in 2.2.4.

(7) Protection and conservation of rare fauna and flora

In the Tadami BR area, several species of wild fauna and flora, which are have become rare in other areas, can be easily seen. Therefore, the need for protection and conservation of such wild fauna and flora is not fully understood by the local residents, and they were stolen, captured or collected by people from outside the area, leading to the decrease of rare wild fauna and flora. Tadami Town has tried to protect and conserve them based on the “Ordinance to Protect Wild Fauna and Flora in Tadami Town.” On the other hand, there are cases where the growth and habitat areas of rare species are destroyed by public works (e.g., road widening work, river improvement, and farmland consolidation) (Photo 4-16). Such public works are implemented without sharing information beforehand with the Tadami Town Office UNESCO Biosphere Reserve Promotion Section, so sharing information beforehand and coordination among the parties concerned is an issue.



Photo 4-16 A community of *Adonis ramosa*, which had been established by the side of the road, was lost due to road widening work (2022, Fuzawa and Ota). Coordination, with the UNESCO Biosphere Reserve Promotion Section as a point of contact, is required at the construction planning stage.

(8) Ecosystem monitoring

The natural environment changes due to various actions ranging from the global to the regional levels. Therefore, in order to protect and conserve rich natural environment and biodiversity and pass them on to the next generation, it is necessary to scientifically investigate and understand such changes and take measures as necessary. The Tadami Beech Center has established two monitoring plots in a natural beech (*F. crenata*) forest, and conducts a periodic investigation (tree census) every five years to understand the dynamics of the trees (Photo 4-17). Furthermore, Niigata University has established monitoring plots in a riparian forest consisting of trees of the genus *Salix* to investigate their dynamics. There are other different ecosystems in the Tadami BR that also require monitoring, but due to budget and personnel issues, the monitoring has not yet been started, making it an issue to be solved in the future. The implementation of the ecosystem monitoring is positioned as a measure not only in the “Action Plan for the Promotion of Tadami Biosphere Reserve” but also in the “7th Tadami Town Development Promotion Plan,” which is the highest-level plan for the development of Tadami Town.



Photo 4-17 A monitoring plot in a natural beech (*F. crenata*) forest, which is in the late stage of the transition, in Kinonesawa

(9) Extermination of alien species

Alien species threaten the local natural environment and the existence of wild fauna and flora. In the Tadami BR, there have been reports of sightings of common raccoon (*Procyon lotor*, designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species), alien plants such as cut-leaved coneflower (*Rudbeckia laciniata*, designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species), tall goldenrod (*Solidago canadensis* var. *scabra*, classified as “alien species for priority measures” on the list of alien species that may cause damage to ecosystems, etc. in Japan) and locust tree (*Robinia pseudoacacia*, classified as “alien species for industrial control” on the list of alien species that may cause damage to ecosystems, etc. in Japan) have invaded and flourished, and alien fish such as largemouth bass (*Micropterus salmoides*, designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species) and bluegill (*Lepomis macrochirus*, designated as an “invasive alien species” based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species) have been released into the dam lake and are breeding there. As for largemouth bass (*M. salmoides*) and bluegill (*L. macrochirus*), the Ihoku District Non-contribution Fishery Cooperative has been conducting extermination activities such as setting up artificial spawning beds, but the population density cannot be further reduced from a certain level, and more effective extermination methods are being sought (Photo 4-18). In terrestrial areas, the invasion and spread of alien species, mainly due to public works, have become serious, and urgent countermeasures are required. Cut-leaved coneflower (*R. laciniata*) and tall goldenrod (*S. canadensis* var. *scabra*) were introduced by public works such as river improvement, and their distribution has been expanding rapidly in recent years, mainly in river zones, requiring urgent and concrete measures to drive them out. Locust tree (*Robinia pseudoacacia*) was introduced by a revegetation project in the upper reaches of the Ina River, and flowed down through the river, expanding its distribution mainly in the riparian forests. In the riparian forests within the Tadami BR, the population of adult trees is not large because the natural disturbance system of the river is maintained. However, there is a risk that the population will increase if river improvement is carried out and the natural disturbance system is lost. We must continue to pay attention to raccoons because there are not many reported sightings of them.



Photo 4-18 Largemouth bass (*M. salmoides*) exterminated by the Ihoku District Non-contribution Fishery Cooperative.

Extermination methods such as fishing and artificial spawning beds have been used, but more effective extermination methods are being sought.

(10) Maintenance of “Tadami Observation Forest”

As described in [Transition Area] in 2.2.4.

4.5 What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be in most effective for conservation for sustainable development?

- Most of the core area and buffer zone are designated as the Protected Forest “Oku-Aizu Forest Ecosystem Reserve” or “Aizu-Sanchi Green Corridor” under the Act Concerning Utilization of National Forest Land or as the “Echigosanzan-Tadami Quasi-national Park” under the National Park Act. Their protection and conservation functions have been maintained or strengthened by the relevant administrative agencies (Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency, Fukushima Prefecture Nature Conservation Division of Fukushima Prefecture, Minami-Aizu Development Bureau of Fukushima Prefecture, and Tadami Town) over the past ten years, and continued collaboration and cooperation among them will be important.
- In the transition area, the conservation function has been enhanced by the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” and various projects of Tadami Town. Activities that have a significant impact on the ecosystem are mainly public works, and it is important for the administrative agencies that order such works to understand the conservation of the natural environment and biodiversity and to implement concrete measures in order to enhance the conservation function of the transition area. Furthermore, the increased awareness among the

local residents that it is important to conserve the local natural environment and biodiversity to protect the foundations of their own livelihood will help to enhance the conservation function.

- The Tadami Beech Center, an organisation of the Tadami Town Office, which is the main management body of the Tadami BR, is responsible for the protection and conservation of the natural environment and biodiversity of Tadami Town, and has planned and implemented various conservation programmes (refer to 4.2) over the past 10 years to protect and conserve the natural environment and biodiversity in the Tadami BR area. On the other hand, in most of the cases where the protection and conservation of the natural environment and biodiversity are required, coordination with the lives of local residents and business activities is required. In order to achieve sustainable development of the region while striving to protect and conserve the natural environment and biodiversity of the Tadami BR, it is increasingly important for the Tadami Beech Center to secure and continuously assign personnel who not only have specialised knowledge expertise in the natural environment and wild fauna and flora to protect and conserve them but also have communication skills to build good relationships with stakeholders (refer also to 2.3.2 and Table 2-2). Enhancing the structure of the Tadami Beech Center is a priority strategy for the successful conservation toward the sustainable development of the Tadami BR.
- Historically, the right to collect edible wild plants, mushrooms, living materials, and fuel materials has been given in public lands and common forests in the Tadami region, such as national forests, town forests and property wards, and such food and materials have been utilised under strict management to support local livelihood and economy. In the national forests and fields that occupy most of the Tadami BR, a common forest system was established after World War II, and such common practices have been maintained. This system allows common practices if each settlement that has the right of common practices forms a common forest association and cooperates in the management of a national forest under a contract with the national forest, which benefits both the local settlement and the national forest. Sustainable utilisation of natural resources under this system plays an extremely important role in protecting and conserving the local natural environment and biodiversity.

4.6 Other comments/observations from a biosphere reserve perspective.

The main conservation programmes implemented in the biosphere reserve are mostly carried out by the self-sponsored funds and personnel of Tadami Town Office, which is the core organisation for the BR promotion. However, it will be difficult for a small depopulated and ageing municipality in a mountainous area to carry out all of the programmes in the future. It is indispensable to introduce external funds and gain cooperation and support from outside organisations for the implementation of the conservation programmes. Financial support from the national and prefectural governments and private organisations, as well as human support from BR networks, university research institutes, NPOs, etc. are required for these projects.

5. THE DEVELOPMENT FUNCTION:

[This refers to programmes that address sustainability issues at the individual livelihood and community levels, including economic trends in different sectors that drive the need to innovate and/or adapt, the main adaptive strategies being implemented within the biosphere reserve, and initiatives to develop certain sectors such as tourism to complement and/or compensate for losses in other markets, employment, and community well-being over the past ten years]

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve (e.g. agriculture and forest activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).

The main industries in the Tadami BR based on the number and percentage of people employed are agriculture, and manufacturing and construction industries. However, among these, agriculture can be said to be the basic industry of the region. That is to say, even among households whose main income comes from industries other than agriculture, the majority of them own farmland and are engaged in agriculture. Most of the agricultural products produced in this way are consumed by themselves, and some of them are sold, leading to cash income. Therefore, agriculture can be said to be an important industry that supports the lives and households of the residents. Although the number of people employed in each of these sectors has been decreasing with the overall decline in population (Figure 5-1), the percentage of people employed has not changed significantly. However, the number and percentage of people employed in the medical and welfare sectors is on the rise (Figures 5-1 and 5-2).

Although it is not possible to read from Figures 5-1 and 5-2, many of those who earn income from traditional gathering of forest resources such as edible wild plants and mushrooms are engaged in industries mentioned in the statistical information and are also engaged in gathering activities as a side job.

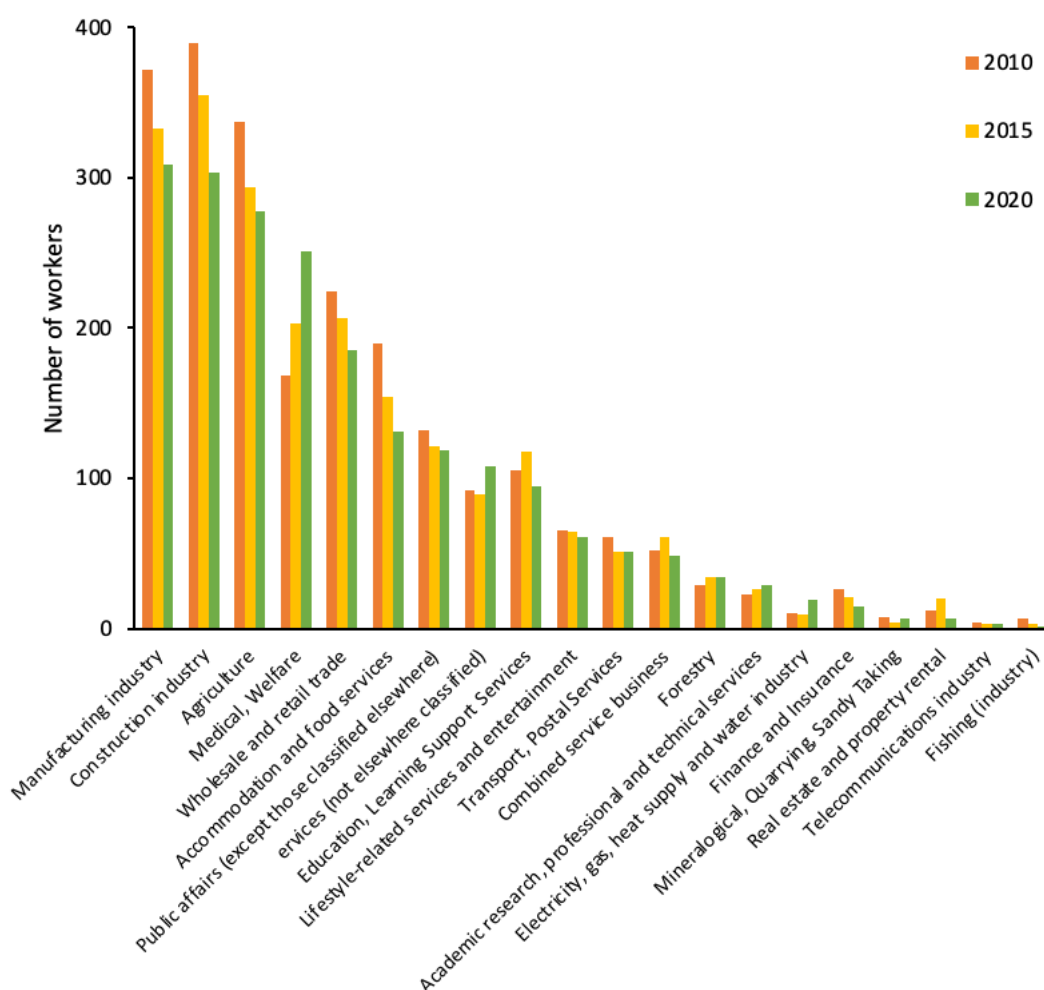


Figure 5-1 Changes in the number of people employed in each industrial sector in Tadami Town (Source: 2010-2020, national census by the Ministry of Internal Affairs and Communications)

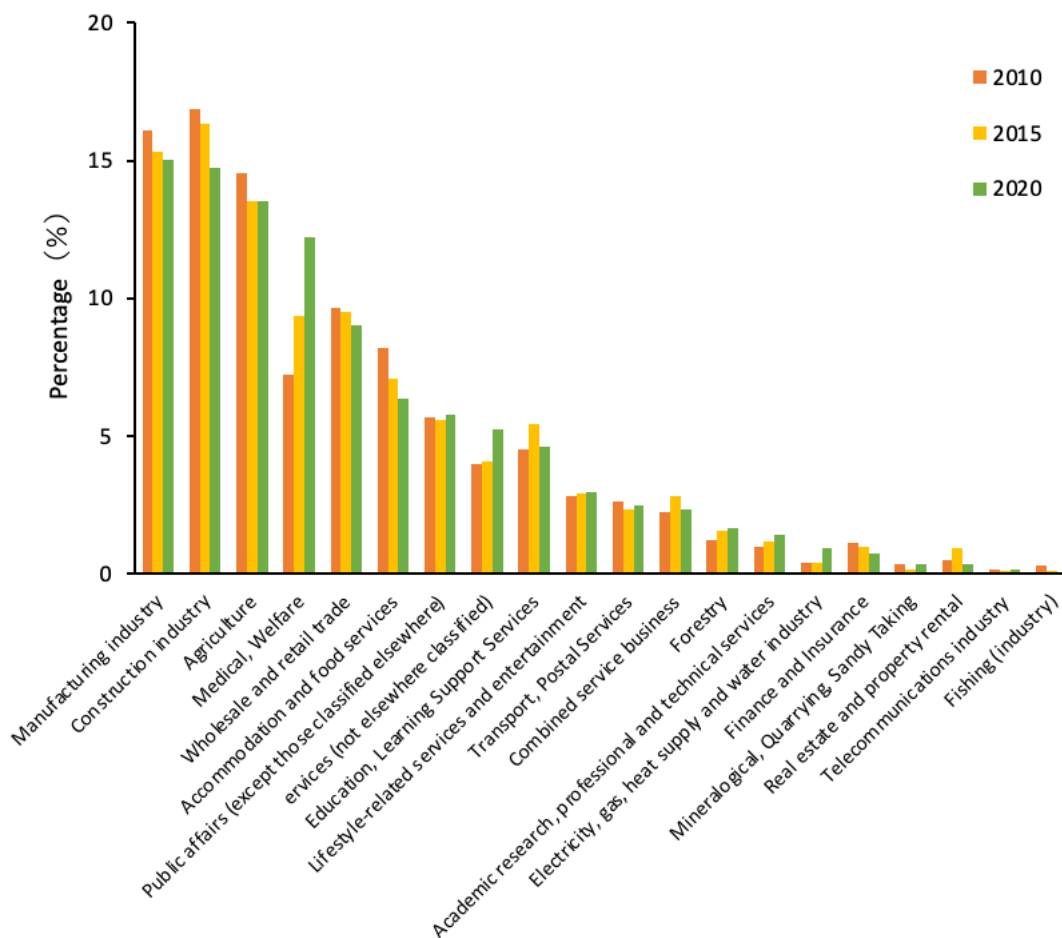


Figure 5-2 Changes in the percentage of people employed in each industrial sector in Tadami Town (Source: 2010-2020, national census by the Ministry of Internal Affairs and Communications)

5.2 Describe the tourism industry in the biosphere reserve. Has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve? Are there any studies that examine whether designation of the area

as a biosphere reserve has influenced the number of tourists? Please provide the bibliographic information of any studies and/or a paper copy in an annex.

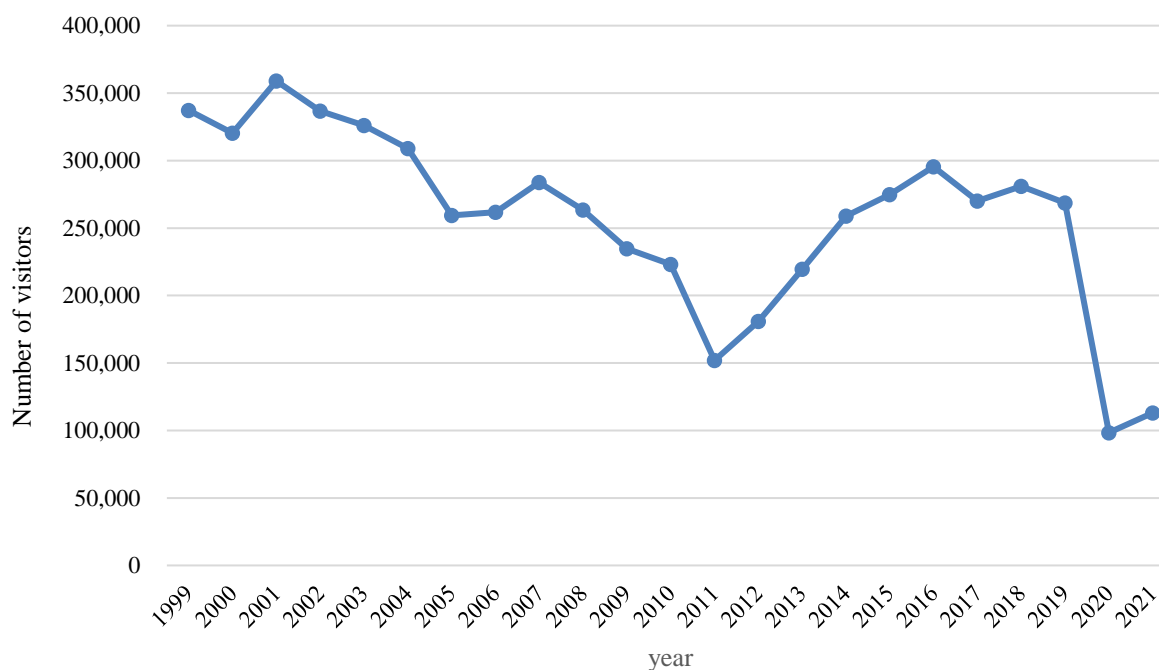


Figure 5-3 Changes in the number of visitors to Tadami BR (Source: Statistical data provided by the Tourism, Commerce and Industry Division, Tadami Town Office)

- The number of visitors has been on a gradual decline since 1999, when statistics began, and dropped sharply in 2011, when the Great East Japan Earthquake, the accident at Fukushima No.1 Nuclear Power Plant and the Niigata and Fukushima heavy rainfall disaster occurred. Since then, the number of visitors had gradually increased and after the registration of Tadami BR in 2014, recovered to about 270,000 (Figure 5-3). Although no detailed investigation has not been conducted on whether the designation of the BR affected the number of visitors, it is believed that the designation had a certain effect on the increase in the number of tourists because it was covered by various media before and after the designation of the BR. In recent years, the number of visitors has been the lowest since statistics began, due to the spread of COVID-19.
- Tourism is one of the main industries in the Tadami BR area. In the Tadami BR area, package group tour type tourism (mass tourism) consisting mainly of conventional dam sightseeing has been conducted. However, due to changes in tourism styles and problems with tourism infrastructure such as transport networks connecting the Tadami BR area and beyond and accommodations, mass tourism is not expected to lead to exponential development of tourism. However, the promotion of green tourism and eco-tourism, in which the Tadami Town's unique and rich natural environment and traditional lifestyles and culture nurtured by heavy snowfall are used as tourism resources, based on the principles and objectives of the UNESCO MAB Programme is highly likely to lead to development and branding of tourism in the Tadami BR area.
- Green tourism to experience the traditional lifestyles and culture of the Tadami region has been provided in the form of farm stays and educational travel. In particular, the number of people accepted for farm stays has increased significantly since 2016 as a result of the strengthening of efforts in a wide area including Tadami Town and the Tadami BR (Figure 5-4). As for eco-tourism, Tadami Town has trained "Tadami Town official nature guides" as a BR-related project, and they are active as guides for trekking in beech forests of the "Healing Forest" and "Blessed Forest" (protected forests), as well as climbing Mt. Asakusadake, Mt. Aizu-Asahidake, Mt. Gamoudake and Mt. Yogai, which are four well-known mountains in Tadami. On the other hand, the system for accepting ecotours and

the public relations activities for tour products is not sufficient. Under such circumstances, the experience-based stay type “School Annex in the Forest Fuzawa,” which has been developed by using a closed-down branch school as an accommodation facility, has been attracting attention. The Tadami BR has a diverse natural environment ranging from human settlements to deep mountains, and well-maintained trekking routes, so it is expected to use these resources for promotion and branding of ecotours. Furthermore, trekking through beech forests accompanied by a guide (interpreter) plays a major role in understanding the importance of protection and conservation of the natural environment and wildlife.

- Furthermore, many of the tourism resources in the region cannot be fully utilised, and future projects to utilise them are expected. For example, the Tadami Line of East Japan Railway Company (JR East) that connects Koide, Niigata Prefecture and Tadami has been used as an important means of transport for the residents, but it could be a pillar of regional tourism because it runs through a primeval natural environment (nivation landforms and beech forests). The landscape of the basin of the Ina River, which still has nivation landforms and a highly natural river environment including riparian forests consisting mainly of trees of the family Salicaceae, is also suitable for photo and video shooting.
- In August 2021, Tadami Town concluded a comprehensive agreement with Mont-bell Co., Ltd. a Japanese general outdoor manufacturer, concerning collaboration and cooperation for the purpose of promoting the attractiveness of “Tadami, the Capital of Mother Nature” and “coexistence of human and nature,” which is the basic principle of the “Tadami Biosphere Reserve.” The town is working with Montbell Co., Ltd. to resolve issues in seven areas, including promotion of nature experiences, raising awareness of disaster prevention, and promotion of attractiveness of the region.

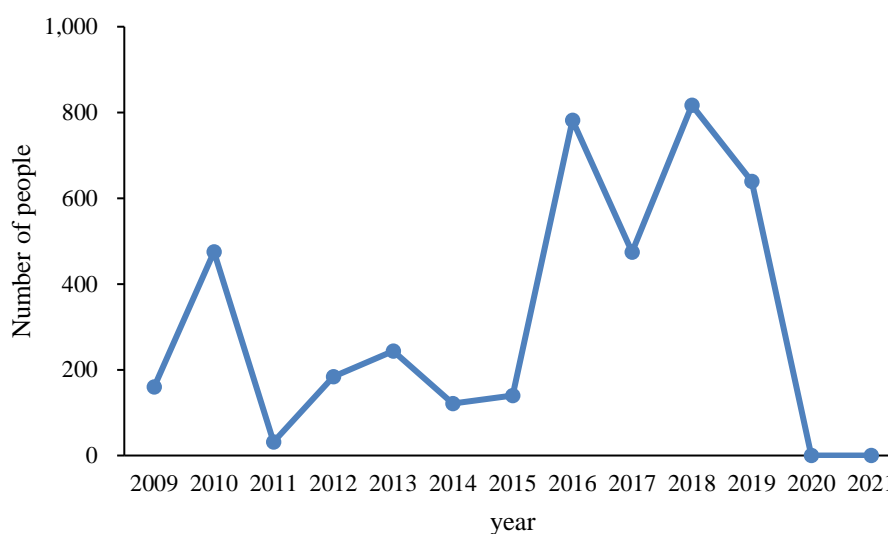


Figure 5-4 Changes in the number of people accepted for farm stays

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review? What kind of new projects or initiatives have been undertaken? What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity? Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities? If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

- According to the Census of Agriculture and Forestry, the total number of farmers in Tadami Town were 703 households in 2010, and 435 households in 2020 showing a significant decrease. In 2020, individuals aged 65 or older made up 40.3% of the population.
- Agriculture is one of the basic industries in the Tadami BR area. The main agricultural products include rice, buckwheat, tomatoes, asparagus, and flowering plants such as gentian and soaproot, and before the registration as a BR, branding of these products had not been fully established except for “Nango Tomato.” After the designation as a BR, with the natural environment of the Tadami BR as a backdrop, rice that is safe and secure for consumers and tastes good has been produced by a production method that takes into consideration the conservation of the natural environment, and the branding of “Tadami Rice” has been promoted. Furthermore, products such as sake have also been produced using the rice, which means that high value-added products that harmonise human activities with the natural environment have been developed, with the aim of turning the primary industry into the sixth industry (Photo 5-1). According to the “2022 Tadami Town Agricultural Revitalisation Council’s Vision for Enhancing Paddy Field Profitability,” as the policy for rice for staple food, it clearly states that “In Tadami Town, which is registered as a UNESCO Biosphere Reserve, unique cultivation methods that take into consideration the natural environment shall be planned and sales using local brands shall be promoted.”
- Although the agricultural management is mainly based on the wet-rice cultivation, many farmers combine it with horticultural crops (priority promotion crops) with high cashing rates, such as summer and autumn tomatoes, asparagus and other vegetables, and gentian, soaproot, statice and other flowering plants that take advantage of the cool climate of the intermontane cold upland. As a result of such management, the number of successors and new farmers who have returned or moved to the town from outside the town is increasing, albeit gradually.

Tadami Rice Brand Council website URL:

<https://tadamirice.studio.site/>



Photo 5-1 Rice shochu (Japanese distilled spirits made from rice) produced by “Nekka LLC,” which is distilled, matured and bottled at a distillery in the Tadami BR using rice from the Tadami BR as a raw material. The company has received many domestic and international awards, and is highly acclaimed not only for the taste of the shochu but also for its efforts to revitalise the local community and to provide environmental education for children through its shochu production.

Nekka LLC website URL:

<https://nekka.jp/>

5.4 How do economic activities in the biosphere benefit local communities?

- The Tadami BR is located in a mountainous area, with poor access to nearby large towns due to geographical conditions and limited transport infrastructure. Therefore, economic activities in the Tadami BR are very important for the lives of residents in the area. For example, most of the residents in the Tadami BR area work for companies that have been attracted to the area (e.g., car and electronic components factories), and the economic activities in the area have a significant impact on the resident population.
- The promotion of economic activities that take advantage of the natural environment and traditional lifestyles and culture in the Tadami BR in industries such as agriculture, forestry, fisheries and tourism will lead to an increase in the migration of outsiders who are interested in sustainable regional development to the Tadami BR area or an increase in the exchange population or the related population, which will further promote economic activities in harmony with people and nature in Tadami BR, and contribute to the maintenance and development of the local communities.

5.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators).

Tadami Town, which is the main management body of the Tadami BR, has formulated the “Action Plan for the Promotion of Tadami Biosphere Reserve” based on the “Tadami Biosphere Reserve Management Plan” formulated by the Tadami Biosphere Reserve Governance Board, and has planned and implemented the following actions for the development function.

(1) Development and industrialisation (branding) of “traditional products of ‘Tadami, the Capital of Mother Nature’”

Encouraging development of and industrialising products using natural resources, agricultural products or traditional techniques in the Tadami BR will lead to inheritance and development of the traditional lifestyles and culture in the Tadami BR and contribute to the revitalisation of local economic activities. Therefore, since 2013, Tadami Town has subsidised and supported the commercialisation of such products, and certified them as “traditional products of ‘Tadami, the Capital of Mother Nature’” to promote the branding of “Tadami, the Capital of Mother Nature” (Photo 5-2; Figure 5-5). Currently, 34 products and 24 business operators (all in Tadami Town) are certified (Tables 5-1, 5-2, 5-3, 5-4, 5-5 and 5-6; Figure 5-6), and the number is maintained or increases every year. These products are sold at facilities in the Tadami BR (Tadami Beech and River Museum <museum facility>, Tagokura Heritage Center <folklore museum>, Tadami Town Information Centre <tourist information centre>, and Tokinosato Yurari <hotel>), and are becoming established as representative souvenirs of the Tadami BR, contributing to the dissemination of information on the natural environment, lifestyles and culture of the Tadami BR. On the other hand, there are products that were once certified but are no longer certified. There are several reasons such as the following for this: for dried edible wild plants, manufacturers moved out of the town due to the ageing of them and the removal of infrastructure development; for preserved food utilising low temperatures in winter, it became difficult to produce them due to abnormal weather (high temperatures in winter); shops in the Tadami BR have little ability to attract customers, making it difficult to turn a profit. As for expanding sales outside the BR area, mail-order sales have been conducted, but they are not sufficient including PR strategies. In order to further inherit and develop traditional lifestyles and culture in the Tadami BR and to revitalise local economic activities, it is necessary to find new products and business operators, examine effective PR strategies, industrialise the products, and expand sales channels.



Photo 5-2 “Traditional products of ‘Tadami, the Capital of Mother Nature’”



Figure 5-5 Brand logos of “Traditional products of ‘Tadami, the Capital of Mother Nature’” with images of the landscape of Tadami Town and Japanese beech (*Fagus crenata*). They are attached to certified traditional products as stickers or tags.

Table 5-1 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (1/6)

No.	Classification	Product name	Description	Main raw materials/ techniques/other resources	Business operator
1	Food	Grandpa Tosuke’s honey (Japanese horse chestnut)	Honey of <i>Apis mellifera</i> using trees native to Tadami Town (Japanese horse chestnut (<i>Aesculus turbinata</i>) and Japanese chestnut (<i>Castanea crenata</i>)) as honey plants	Forest resources (Japanese horse chestnut (<i>A. turbinata</i>) and Japanese chestnut (<i>C. crenata</i>)) / beekeeping techniques	Tosuke Sambe
2		Grandpa Tosuke’s honey (Japanese chestnut)			
3		Fuzawa forest honey “ <i>Tilia Maximowicziana</i> ”	Honey of <i>Apis mellifera</i> using trees native to Tadami Town (<i>Tilia maximowicziana</i> , white angel and castor aralia) as honey plants	Forest resources (<i>Tilia maximowicziana</i> , white angel (<i>Malus tschonoskii</i>) and castor aralia (<i>Kalopanax septemlobus</i>)) / beekeeping techniques	Nagami Kobayashi
4		Fuzawa forest honey “White Angel and Tree Flowers Blooming in Spring”			
5		Fuzawa forest honey “Castor Aralia”			
6		Shimi-daikon	Natural freeze-dried preserved food made by hanging fresh Japanese radish under eaves during severe winter and freeze-drying it utilising the winter climate. Useful for simmered dishes	Agricultural product (Japanese radish) / preservation techniques / climate	Ritsu Kikuchi
7		Hazekake rice made by everyone	Rice harvested from pesticide-reduced paddy fields and dried in the sun on a wooden frame called “hasa.” Such rice is called “hazekake” in the Tadami region.	Agricultural product (rice) / rice farming techniques / sunlight	RISESAPEUR Co., Ltd.
8		Senta’s doboroku (Buna-no-Izumi, Buna-no-Shizuku)	The only doboroku (unrefined sake) made in Tadami Town, which has been designated as a special zone of doboroku. Flavourful doboroku produced by the climate of the snow country using home-grown rice as a raw material.	Agricultural product (rice) / brewing techniques / -	Guesthouse Yamakanouya
9		Senta’s doboroku “Buna-no-Kirameki”			
10		Senta’s doboroku cup for drinking comparison			

Table 5-2 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (2/6)

No.	Classification	Product name	Description	Main raw materials/ techniques/other resources	Business operator
11	Food	Ame (starch syrup)	Starch syrup with gentle sweetness, made only from glutinous rice and malt without using sugar. In Tadami Town, it is traditionally made during severe winter, and women gather at each house where the starch syrup is made and have a tea party called “Ameyobare” where they enjoy the starch syrup and have a pleasant chat.	Agricultural products (rice and barley) / saccharification techniques / -	Aizu Sangyo Co., Ltd.
12		Kokuwa (hardy kiwi) jam	Sweet and sour jam made from hardy kiwi (<i>Actinidia arguta</i>).	Forest resource (hardy kiwi (<i>A. arguta</i>)) /-/-	
13		Whole yama-nashi jam	Jam made from yama-nashi (wild Japanese pear), the fruit of white angel (<i>Malus tschonoskii</i>). In Tadami Town, wild Japanese pear is said to be good for the throat, and has been used traditionally.	Forest resource (white angel (<i>Malus tschonoskii</i>)) /-/-	
14		Ame (starch syrup)	Starch syrup with gentle sweetness, made only from glutinous rice and malt without using sugar. In Tadami Town, it is traditionally made during severe winter, and women gather at each house where the starch syrup is made and have a tea party called “Ameyobare” where they enjoy the starch syrup and have a pleasant chat.	Agricultural products (rice and barley) / saccharification techniques / -	Tochibokko
15		Secret aomame miso	Miso made from aomame (green soybeans) and rice from Tadami Toan without using any extra ingredients. It has deep umami and richness, and is slightly sweet.	Agricultural products (beans and rice) / fermentation techniques /-	MEGURO KOUJITEN & Miso Co., Ltd.

Table 5-3 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (3/6)

No.	Classification	Product name	Description	Main raw materials/techniques/other resources	Business operator
16	Food	Junen oil	There is a theory that the name Junen (Korean perilla) comes from the fact that if you eat it, you will live ten years (junen) longer. Junen has been planted in a corner of the field of every household, and has been utilised.	Agricultural product (Korean perilla)	Genki-mura Co., Ltd.
17		Junen roll	Made by mixing tofu refuse with junen (Korean perilla), junen seeds, cane sugar and rice flour into Tadami’s miso, rolling it into a ball, wrapping it in a junen leaf, and deep-frying and grilling it. In Tadami Town, a similar side dish of miso wrapped in shiso leaves has also been eaten.		
18	Handicraft	Osmund fluff coaster	Tadami Town is famous for production of Osmund (<i>Osmunda japonica</i>), and in the past, the fluff produced when Osmund (<i>O. japonica</i>) was processed was collected and used as cotton for cotton-filled hanten short coat and futon, and as cores for temmari cotton balls. This coaster is made by weaving yarn made by carefully pre-treating Osmund fluff and spinning it with cotton.	Forest resource (Osmund (<i>O. japonica</i>)) /-/-	Tsumugiya ikuko
19		Hand-spun Osmund fluff yarn coaster	Tadami Town is famous for production of Osmund (<i>Osmunda japonica</i>), and in the past, the fluff produced when Osmund (<i>O. japonica</i>) was processed was collected and used as cotton for cotton-filled hanten short coat and futon, and as cores for temmari cotton balls. This coaster is made by weaving yarn made by carefully pre-treating Osmund fluff and spinning it with cotton.	Forest resource (Osmund (<i>O. japonica</i>)) /-/-	Fukosya

Table 5-4 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (4/6)

No.	Classification	Product name	Description	Main raw materials/ techniques/other resources	Business operator
20	Handicraft	Products of Osmund fluff yarn (business card cases, small articles, mufflers, and half-width obi)	Business card cases, stoles, bags, obi, and other small articles made by weaving Osumnd (<i>O. japonica</i>) fluff	Forest resource (Osmund (<i>O. japonica</i>)) /-/-	Fukosya
21		Tadami's temmari	Tadami Town is famous for production of Osmund (<i>Osmunda japonica</i>), and in the past, the fluff obtained when Osmund (<i>O. japonica</i>) was processed was collected and used as cotton for cotton-filled hanten short coat and futon, and as cores for temmari cotton balls. Chiyo-no-Kai has revived the “Temmari of Tadami using Osmund fluff,” which was once ceased to exist, and carefully makes temmari cotton balls one by one using pre-treated fluff as cores for them.	Forest resource (Osmund (<i>O. japonica</i>)) /-/-	Chiyo-no-Kai
22		Tadami's temmari (necklaces, hair ties, and ornaments)			
23		– From Tadami forest – Hand-dyed beech leaves (tenugui hand towels, drawstring pouches, tote bags, etc.)	Dyed goods using Japanese beech (<i>Fagus crenata</i>) and various other plants native to Tadami Town.	Forest resources (Japanese beech (<i>F. crenata</i>), etc.) / vegetable dyeing techniques /-	Bunairo Club
24	Silver vine handiwork, <i>Carex dolichostachya</i> handiwork	Silver vine handiwork is to tear silver vine (<i>Actinidia polygama</i>), draw it through the hand to shape it into strips, and weave baskets and colanders using the strips. <i>Carex dolichostachya</i> handiwork is to tear <i>Carex dolichostachya</i> or <i>Boehmeria silvestrii</i> , twist it into cords, and knit bags using the cords. Winter handiwork of the snow country Tadami.	Forest resources (silver vine (<i>A. polygama</i>), <i>C. dolichostachya</i> , <i>B. silvestrii</i> , etc.) / weaving techniques /-	Matatabi-ya	

Table 5-5 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (5/6)

No.	Classification	Product name	Description	Main raw materials/ techniques/other resources	Business operator
25	Handicraft	Vine handiworks of Aizu Tadami	Using akebi vines and Japanese walnut bark, a variety of products from colanders to bags are made using various weaving methods. Winter handiwork of the snow country Tadami.	Forest resources (three-leaf akebia (<i>Akebia trifoliata</i>), Japanese walnut (<i>Juglans mandshurica</i> var. <i>sieboldiana</i>), etc.) / weaving techniques /-	Tadami Folkcraft Preservation Society
26		Handmade folkcraft articles of Oku-Aizu “Meiwa”	Using walnut bark, wild vine (<i>Vitis coignetiae</i>) vines, Japanese linden (<i>Tilia maximowicziana</i>) bark, silver vine (<i>A. polygama</i>) vines, <i>Carex dolichostachya</i> , etc., a variety of products from straps to bags are woven. Winter handiwork of the snow country Tadami.	Forest resources (wild vine (<i>V. coignetiae</i>), <i>T. maximowicziana</i> , silver vine (<i>A. polygama</i>), Japanese walnut (<i>J. mandshurica</i> var. <i>sieboldiana</i>), <i>C. dolichostachya</i> , etc. / weaving techniques /-	Meiwa Folkcraft Preservation Society
27		Tadami’s wood products	Craftsmen carve each wood product out by a traditional method using a potter’s wheel. Woodwork such as tea trays, confectionery containers, and tea set boxes.	Forest resources (Japanese horse chestnut (<i>Aesculus turbinata</i>), Japanese zelkova (<i>Zelkova serrata</i>), etc. / woodwork techniques /-	Yazawa Kogei
28		Tadami’s pure wooden plates	Small trays and small plates made by a few woodworkers who have inherited the techniques of kijishi (woodturners). Each tray or plate is carefully carved out of broad-leaved tree using a belt-type potter’s wheel. A wide variety of materials are used, including Japanese horse chestnut (<i>A. turbinata</i>), Japanese zelkova (<i>Z. serrata</i>), and amur cork tree (<i>Phellodendron amurense</i> var. <i>amurense</i>).	Forest resources (Japanese horse chestnut (<i>A. turbinata</i>), Japanese zelkova (<i>Z. serrata</i>), amur cork tree (<i>P. amurense</i> var. <i>amurense</i>), etc.) / woodwork techniques /-	Fukazawa Mokko
29		Tadami’s simple small trays			
30		Kuksa cups	Kuksa cups ground by hand one by one using raw wood grown in the harsh climate of the snow country Tadami.	Forest resource (Japanese zelkova (<i>Z. serrata</i>) / woodwork techniques /-	Zukku Design Wood Working

Table 5-6 Product names, description, raw materials/techniques, and business operators of “Traditional products of ‘Tadami, the Capital of Mother Nature’” (6/6)

No.	Classification	Product name	Description	Main raw materials/ techniques/other resources	Business operator
31	Handicraft	Kuromoji toothpicks and chopsticks	Kuromoji (<i>Lindera umbellata</i> var. <i>membranacea</i>) has long been used for toothpicks, kanjiki (snowshoes), edges of colanders, etc. <i>Lindera umbellata</i> var. <i>membranacea</i> collected in late autumn is dried for about a year, and then carefully shaved to make products one by one.	Forest resource (<i>L. umbellata</i> var. <i>membranacea</i>) / woodwork techniques /-	Yoshisuke Meguro
32		Kyogi	Kyogi is a thin sheet of wood with a thickness of 1 mm or less, and was used as a packaging material. It is an environmentally friendly product useful for plastic reduction, etc., and is expected to be used for a variety of applications.	Forest resources (Japanese red pine (<i>Pinus densiflora</i>) and other trees) / kyogi production techniques /-	Oku-Aizu Kyogi Seisakujo
33		Akaishi accessories	Red jasper is called Akaishi in Tadami Town, and has been used as garden stones or alcove decoration. Accessories made from the Akaishi.	Mineral resource /-/-	pi pirka
34		Patterns for Tadami’s work clothes (Hoso-yukkogi, and dafu-yukkogi)	Yukkogi is traditional work clothes of Tadami Town. In the past, people of Tadami made their own work clothes by themselves, and devised ways to avoid wasting cloth when cutting it. The purpose is to pass down the work clothes by using patterns of yukkogi.	-/cutting and sewing techniques /-	medelleaf LLC
35	Others	Deodoriser of Kajigo-yaki charcoal	“Kajigo-yaki” is a traditional charcoal-making method performed in the mountains of Tadami Town, and the charcoal made by “Kajigo-yaki” was used mainly for sunken hearths. Overall, the charcoal is available in small pieces, and this deodoriser uses such small pieces of charcoal.	Forest resources (snow camellia (<i>Camellia rusticana</i>), Japanese beech (<i>Fagus crenata</i>), <i>Lindera praecox</i> var. <i>pubescens</i> , etc.) / charcoal-making techniques /-	Exchange Promotion Division, Tadami Town Office



Figure 5-6 Producers of “Traditional products of ‘Tadami, the Capital of Mother Nature’”. A variety of generations are participating.

(2) Inheritance and fostering of traditional crafts and food culture

- Although there are traditional weaving handiwork using natural materials such as silver vines, akebi and walnuts and woodwork that follows the techniques of kijishi (woodturners), a shortage of successors has become an issue. There are four organisations that practice the weaving handiwork. Tadami Town has established the “Tadami Biosphere Reserve Activities Support Subsidy System,” and has provided support to each organisation by publicising their activities, helping them improve their techniques, and creating product packages. Through this system and the efforts of each organisation, the organisations are still being maintained. The weaving handiworks produced are certified as “traditional products of ‘Tadami, the Capital of Mother Nature’,” and it is necessary to turn the handiworks in the Tadami region into brands and foster successors through traditional product brands. As for the woodwork that follows the techniques of kijishi (woodturners), there is currently only one woodworker, and there is no successor, and the special characteristics of the equipment used makes it difficult to inherit the techniques. On the other hand, through the project of “traditional products of ‘Tadami, the Capital of Mother Nature’”, new woodworkers who use wood produced in the Tadami BR have emerged.
- The Tadami region has a traditional food culture that makes use of local resources. Representative examples include local cuisine using edible wild plants and mushrooms, Ohira, Izushi using freshwater fish, and freeze-dried rice cake and Japanese radish. These are served at guesthouses and inns in the Tadami BR, and are also sold as souvenirs, including “traditional products of ‘Tadami, the Capital of Mother Nature’.” In addition, the Tadami Beech Center held themed exhibitions at the “Tadami Beech and River Museum” to explain traditional food culture.

(3) Inheritance and fostering of traditional performing arts

- In the past, the Tadami region had a variety of traditional performing arts originated from its historical and cultural background, but many of them were lost with progress in modernisation and depopulation. Among them, “Saotome Odori (dance)” and “Tata Kagura” (both of which are Fukushima Prefecture Important Intangible Folk Cultural Properties), traditional performing arts that began in the early Edo period to pray for bounteous harvests in the year, have been inherited by the preservation societies of the Kobayashi and Yanatori settlements. The Education Board of Tadami Town supports the activities of the preservation societies with a subsidy for fostering folk performing arts preservation organisations. In addition, Tadami Municipal Meiwa Elementary School, which has been registered as a member of the UNESCO ASPnet, provides opportunities for children to learn traditional performing arts from local preservation societies and present what they have learnt to the community as part of ESD (Photo 5-3). The Education Board of Tadami Town also provides financial support for this. The lost traditional performing arts also need to be investigated and the possibility of their revival should be explored.
- In the Oku-Aizu region, including the Tadami BR, traditional Inaka Kabuki (local kabuki) has been inherited. A representative example is the Hinoemata Kabuki, which still survives in Hinoemata Village that makes up a part of the Tadami BR area. The Tadami region also had a permanent kabuki theatre in the Asahi district, but the theatre ceased to exist in the early Showa period. In order to inherit the kabuki culture like this, performances of the Hinoemata Kabuki are held in the BR area.



Photo 5-3 Presentation of traditional performing art by children of Meiwa Elementary School (a member of the UNESCO ASPnet) (2018)

(4) Fostering and promotion of eco-tourism and green tourism

As described in 5.2. The number of Tadami Town official nature guides is used as one of indicators to evaluate strategies to foster and promote eco-tourism, and the number is maintained as described in 6.5 (3). Furthermore, as described in “Designation and maintenance of ‘Tadami Observation Forest’” in 4.2, new fields for eco-tourism have been developed. The number of people accepted for farm stays and educational travel is used as one of indicators to evaluate strategies to foster and promote green tourism, and as described in 5.2, the number has been increasing, except for a decrease due to the influence of COVID-19. While it can be evaluated that the fostering and promotion of eco-tourism and green tourism in the Tadami BR has progressed over the last 10 years, there are many issues to be addressed in order to establish a

brand for tourism that takes advantage of the natural environment, lifestyles and culture in the Tadami BR. For example, such issues include development of a system to accept eco-tours, and public relations activities for tour products.

(5) Fostering and promotion of environmentally friendly agriculture

- Agriculture is extremely important for the Tadami BR, as it is a fundamental industry that supports the lives of the residents, as well as a major industry of the area. The infrastructure of farmland has been developed, and a system is in place that enables establishment of an efficient and productive farming system even with limited human resources. When improving farmland and repairing irrigation or drainage channels, etc., it is necessary to give more consideration to the natural environment and wild fauna and flora, and to maintain and expand sustainable agricultural production, while promoting environmentally friendly stock management that contributes to the fulfilment of multifunctional roles of agriculture. The Fukushima Prefecture Minami-Aizu Agriculture and Forestry Office and the Tadami Town Office have been conducting farmland improvement and repair with consideration for the natural environment and wild fauna and flora, while conducting field surveys and listening to expert opinions (Photo 5-4).
- Furthermore, there is a need for (green) agriculture that minimises environmental impact as much as possible in the production processes of crops. Organic agriculture, which has a low environmental impact has been practiced by some farmers, but is no longer practiced due to reasons such as the increased burden of maintenance and management. On the other hand, some rice farmers have acquired Japan Good Agricultural Practice (JGAP) certification, and are working to achieve branding of rice produced in Tadami Town.



Photo 5-4 Survey of living creatures by the Fukushima Prefecture Minami-Aizu Agriculture and Forestry Office at a planned site for farmland consolidation (2022). The promotion of environmentally friendly stock management in farmland will increase the added value of agricultural products produced in the Tadami BR area.

(6) Establishment of sustainable forest administration (model forestry in heavy snowfall areas)

- As described in 2.2.5.

(7) Promotion of inland water fisheries

- The Tadami and Ina Rivers are located in the uppermost reaches of the Agano River system that flows into the Sea of Japan, and used to be blessed with abundant fishery resources of anadromous fish, such as salmon and trout, that went upstream from the Sea of Japan side. However, the construction of dams for the development of power sources that began in the early Showa period prevented such fish from going upstream, and inland water resources also decreased drastically. The postwar inland water fisheries in this area depended exclusively on the release of freshwater fish from other areas to maintain the resources, and this has continued to this day. Under these circumstances, it is necessary to maintain and manage fishery resources by utilising the forces of nature, and to promote the marine product processing industry based on aquaculture. In order to achieve this, it is first necessary to conduct a survey on habitats and resources of fish in the Tadami and Ina River systems. In Tadami Town, a survey of fish in the basin of the Ina River was conducted, and the results indicated that the environment suitable for fish habitat has decreased due to river improvement and other factors (Kuraishi et al., 2017; Harumoto et al., 2019). In response to this, no specific coordination or measures have been made in inland water fisheries promotion and river management utilising the forces of nature. Freshwater fishes are important ingredients in the Tadami region's local cuisine (e.g., Ohira and Izushi). Achieving an increase in resources through proper resource management will not only lead to the inheritance of such local cuisine, but will also greatly benefit local tourism by bringing visitors who do recreational fishing such as mountain stream fishing. As for the endangered native Japanese char (*Salvelinus leucomaenis pluvius*), protecting and conserving them by taking immediate measures for resource and gene preservation is believed to contribute to the future branding of local resources. Currently, a survey is being conducted to identify rivers inhabited by the native Japanese char. In addition, it has been pointed out that the resources of fish targeted for recreational fishing, such as landlocked salmon and Japanese char, have been decreasing due to overfishing, so the local fishery cooperatives are taking measures to prohibit fishing by designating protected rivers in some rivers in the headwaters area.

<Reference>

- Kuraishi M, Harumoto Y, Fujii K (2017) Fish fauna in the Ina River, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 6: 15-25 **(in Japanese with English summary)**
- Harumoto Y, Araki M, Tokura K, Nagayama S (2019) Fish fauna of tributaries of the Ina River, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 7: 20-27 **(in Japanese with English summary)**

(8) Making use of natural environment to develop industries and attract companies

- The Tadami BR has a rich natural environment and water resources, natural resources such as edible wild plants and wood, and agricultural products produced based on the natural environment. The development of local industries and start-ups utilising these local resources is extremely important for the revitalisation of the local economy of the Tadami BR. Therefore, efforts have been made to develop existing local industries by utilising the local resources, but in particular, the industries utilising natural resources, are declining against the background of depopulation, ageing of population, and a lack of successors. Furthermore, although new products and producers were unearthed through the project of "traditional products of 'Tadami, the Capital of Mother Nature'", these products have not yet been industrialised. Honey has a great potential for industrialisation because the Tadami BR area has abundant sources of honey.

On the other hand, the national government continues to impose restrictions on shipments of some of edible wild plants, mushrooms and wild bird and animal meat due to the dispersion of radioactive material caused by the TEPCO's Fukushima Nuclear Power Plant accident in 2011. These restrictions on shipments continue to impose financial and psychological burdens on the local residents, such as test costs, creating a situation in which they cannot be proactive in developing new ways to utilise natural resources.

- Furthermore, active attraction of companies whose principles and businesses are consistent with the principles and objectives of the UNESCO Biosphere Reserve will not only benefit the local economy in no small way, but will also create new employment opportunities for the local residents. For this reason, in the Tadami BR area, we have been working actively to attract and support companies that meet the principles and objectives of the UNESCO Biosphere Reserve, utilise the local environment and resources, and contribute to the sustainable development of the area, but have not yet attracted any new companies.

(9) Attracting new townspeople and interregional exchange for regional revitalisation

- Amid the rapid depopulation and ageing of population, it is not enough for the local residents within the Tadami BR alone to promote the UNESCO Biosphere Reserve activities and maintain and develop vibrant local communities. Therefore, in order to achieve these, participation, support and cooperation from outside the BR area are essential. Tadami Town has been active in accepting new townspeople, regardless of whether they are permanent resident, temporary residents, or long- or short-stay visitors. For example, the town has provided migration support for those who return or move to the town from outside the town, support for farming, and support for school attendance, and implemented migration experience tours. The town has also made efforts to improve the environment for employment, housing, education, medical care, etc. As a result, migrants who work as civil servants or farmers have become settled.
- Furthermore, Tadami Town has provided a “hometown-like environment” and gained cooperators for the promotion of the area through exchange programs with Kashiwa City, Chiba Prefecture, which is located in the Tokyo metropolitan area and has a relationship with Tadami Town as a “hometown exchange city.” The “‘Tadami, the Capital of Mother Nature’ exhibitions” and “Tadami Biosphere Reserve exhibitions,” which the Tadami Beech Center has held in Fukushima Prefecture (three times in three venues) and the Tokyo metropolitan area (four times in four venues), are examples to show that such exhibitions have played a certain role as places for promoting the Tadami BR by introducing the nature, lifestyles and culture of Tadami (Photo 5-6). Tadami Town has interacted with universities and researchers through “‘The Capital of Mother Nature’: An academic investigation research subsidy project” implemented by the town. In the future, it is expected that these interregional exchanges will be continued and developed, and the human network obtained through such exchanges will be utilised to accelerate the realisation of the principles and objectives of the BR.



Photo 5-6 “Tadami Biosphere Reserve exhibition” in Kashiwa City, Chiba Prefecture, which is a “hometown exchange city” with Tadami Town (2018)

(10) Landscape improvement, etc. as tourism resources

- In the Tadami BR area, there are landscapes that attract visitors, such as mountain landscapes unique to the area including nivation landforms and mosaic vegetation created by heavy snowfall, highly natural river landscapes along the Ina River including riparian forests dominated by *Salix* spp., and rural landscapes created as a result of land use by the local residents. Tourism that takes advantage of the landscapes of this area is one of the clues to regional revitalisation. Tadami Town has enacted the “Regulation for the protection and encouragement of natural scenery of Tadami Town,” and is promoting initiatives to conserve the landscapes with a focus on public facilities. Furthermore, the town also conducted landscape improvements to restore the riparian landscape of the basin of the Ina River (Photo 5-7) and along the JR Tadami Line, which has been fully reopened.

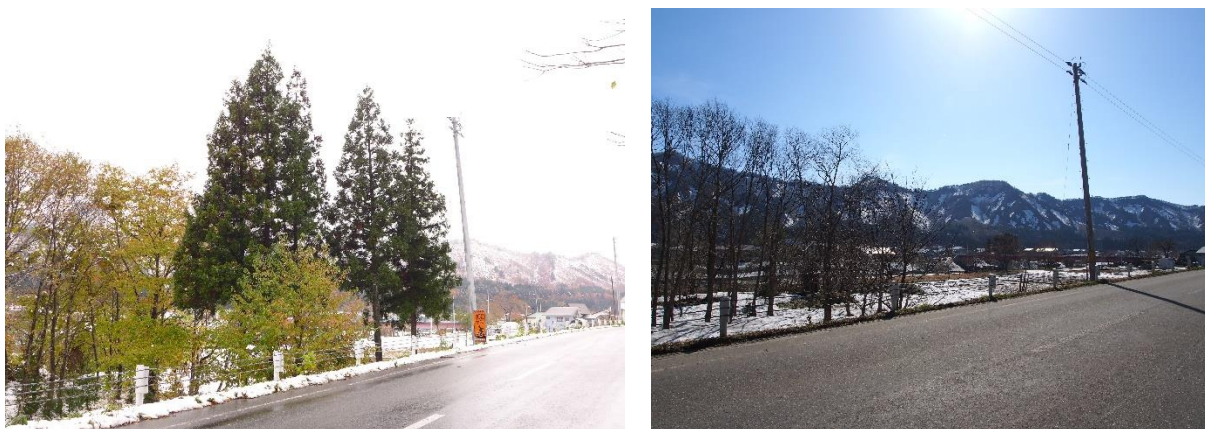


Photo 5-7 The landscape was improved by cutting down planted trees (Japanese cedars) so that the riparian landscape and nivation landform can be viewed from the roadside (Photo on the left: Before improvement; Photo on the right: After improvement).

(11) Tadami Biosphere Reserve activities support projects

- In order to promote activities of the Tadami BR, it is important to carry out activities based on the “Tadami Biosphere Reserve Management Plan” and the “Action Plan for the Promotion of Tadami Biosphere Reserve” formulated by the Tadami Biosphere Reserve Governance Board. For this purpose, Tadami Town established the “Tadami Biosphere Reserve Activities Support Subsidy System” in 2018, and has been promoting the realisation of these plans and the objectives of the Tadami BR (Table 5-7; Photo 5-8).

Table 5-7 List of subsidies provided under the Tadami Biosphere Reserve Activities Support Subsidy System

No.	Year of subsidy	Project category	Subsidised project
1	2018	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Akaishi (iron quartz) accessories
2	2018	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of “Temmari (cotton balls)” handed down in Tadami
3	2018	Sustainable local socioeconomic development project	Project for purchasing and operating wood-splitting machines (engine type)
4	2018	Sustainable local socioeconomic development project	Improvement of quality of folkcraft articles (especially, grape tree bark)

5	2019	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of honey collected from Fuzawa Forest in Tadami Town
6	2019	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of honey collected from Fuzawa Forest in Tadami Town
7	2019	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of “Temhari (cotton balls)” handed down in Tadami
8	2019	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Creation of packages for branding and commercialisation of Senta’s doburoku, “Buna-no-Kirameki” and others
9	2020	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of honey collected from Fuzawa Forest in Tadami Town
10	2020	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Handmade woodwork using wood produced from forests in Tadami
11	2020	“Traditional Products of ‘Tadami, the Capital of Mother Nature’” branding support project	Branding and commercialisation of “Temhari (cotton balls)” handed down in Tadami
12	2021	Sustainable local socioeconomic development project	Project to hand down Tadami’s work clothes
13	2022	Sustainable local socioeconomic development project	Project to hand down Tadami’s work clothes



Photo 5-8 A group of female residents (Chiyo-no-Kai) conducted interviews with local residents about traditional temhari cotton balls using fluff of Osmund (*O. japonica*), which had ceased to be inherited (photo on the left), and after trial and error, commercialised the temhari as small items such as straps (photo on the right) and revived the tradition. The products are also certified as “traditional products of ‘Tadami, the Capital of Mother Nature’”

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

- Tadami Town, the main management body of the Tadami BR, has formulated the “Action Plan for the Promotion of Tadami Biosphere Reserve” (2015-2025) based on the “Tadami Biosphere Reserve Management Plan” formulated by the Tadami Biosphere Reserve Governance Board, and has planned projects related to the development function (details and progress of the projects are as described in 5.5).
- Furthermore, Tadami Town has also incorporated the three functions of the BR into its policies in its highest-level plan for the town development, “7th Tadami Town Development Promotion Plan (2016-2025), with the principles of the BR as its foundation.

5.7 Local business or other economic development initiatives. Are there specific “green” alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

- The “Tadami Rice Brand Council,” composed of farmers and others in the Tadami BR, is practicing green agriculture by using fertilisers that replace plastic-coated fertilisers because plastic-coated shells of fertilisers used for rice cultivation run off from paddy fields and negatively affect ecosystems of downstream areas. The practice of green agriculture such as this is the result of the education to learn about the marine environment at the Tadami Junior High School and the SDGs activities by the students to make reusable shopping bags from newspapers to reduce plastic waste, which influenced adults.
- The Tadami Town Forest Owners’ Cooperative has been working to produce and sell firewood using disaster-damaged trees to reduce fossil fuel consumption with the support of the “Tadami Biosphere Reserve Activities Support Subsidy,” but this project has been stagnant due to price competition in and outside the Tadami BR area.

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage.

(c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the Safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html and http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

- There has been no main change in terms of cultural values in the Tadami BR in the ten years since its registration. However, some of the elders (aged 80 or older) with traditional knowledge have passed away, or they are no longer able to practice traditional lifestyles due to old age. Furthermore, younger generations are less dependent on the traditional lifestyles due to changes in their lifestyles. Traditional knowledge has been recorded to some extent through projects such as the Tadami Town’s town history editing project, but the number of people who practice it tends to decrease. COVID-19 has hindered communication among people of the same generation or different generations, spurring the above-mentioned tendency. On the other hand, “Saotome Odori (dance)” and “Tata Kagura,” the traditional performing arts designated as Fukushima Prefecture Important Intangible Cultural Properties, are inherited by the local preservation societies (Photo 5-9), and elementary and junior high schools in the Tadami BR area, which are members of the UNESCO ASPnet, have programmes to learn these traditional performing arts. The “‘Tadami, the Capital of Mother Nature’ traditional products project” has contributed to the inheritance and development of local traditional knowledge by finding and certifying products that use local resources and traditional techniques.”

- As for tangible cultural properties, after the registration of the Tadami BR, Tadami Town acquired the “Residence of the Hasebe Family (Kanozu guardhouse site),” which is an Important Tangible Cultural Property designated by Fukushima Prefecture, and decided to open it to the public. Furthermore, the “Tadami Museum of Folklore and History was opened, and folk implements designated as National Important Tangible Cultural Properties have been exhibited there.
- The Education Board of Tadami Town designated the following cultural properties in Tadami Town as Tadami Town-Designated Tangible Cultural Properties in accordance with the Tadami Town Ordinance for the Protection of Cultural Properties.
 - Joho-ji Kannon Do (Joho Temple Kannon Hall), wooden pilgrimage votive tablet (designated on June 23, 2017)
 - Ryusen-ji Temple, shogyo tenseki (books of sacred teachings) documents (designated on April 21, 2020)
 - Wooden seated statue of Kokuzo Bosatsu (Akasagarbha) (designated on April 21, 2020)
 - Wooden standing statue of Kokuzo Bosatsu (Akasagarbha) (designated on April 21, 2020)
- The Fukushima Prefectural Board of Education designated the following cultural properties in Tadami Town as Fukushima Prefecture-Designated Important Cultural Properties in accordance with the Fukushima Prefecture Ordinance for the Protection of Cultural Properties.
 - Jinno Shotoki (A Chronicle of Gods and Sovereigns), Tadami transcript (designated on April 6, 2018)
 - Ryuzo-in Temple and Kissho-in Temple in Tadami Town, Shugendo shogyo tenseki (books of sacred teachings) with printing blocks (designated on April 27, 2021)



Photo 5-9 “Saotome Odori (dance)” (photo on the left) in the Yanatori district and “Tata Kagura” (photo on the right) in the Kobayashi district, which are designated as Fukushima Prefecture Important Intangible Cultural Properties. They are performed in each settlement in winter with the participation of men and women of all ages, and serves as an important place for local communication. However, they are not held due to the influence of COVID-19.

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

- Tadami Town's project of "traditional products of 'Tadami, the Capital of Mother Nature'" has provided technical training support for organisations engaged in traditional weaving handiwork and contributed to the inheritance and development of these traditional techniques.
- Tadami Town has been contributing to the promotion of eco-tourism in the Tadami BR area by fostering official nature guides of the town and providing follow-up training to improve the quality of the nature guides.
- Tadami Town conducted training and technical guidance for sustainable forest administration and management for forest owner's cooperative and forest holders to ensure proper forest administration and technical improvement in the region.

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

Indicators for measures related to the development function (refer to 5.8) in the "Action Plan for the Promotion of Tadami Biosphere Reserve" formulated by Tadami Town, the main management body of the Tadami BR, based on the "Tadami Biosphere Reserve Management Plan" formulated by the Tadami Biosphere Reserve Governance Board are as described below.

(1) Branding of "traditional products of 'Tadami, the Capital of Mother Nature'"

Indicator 1: Number of certified products and number of producers

- Maintaining or increasing these numbers indicates that local resources have been utilised effectively and traditional techniques have been passed down in the Tadami region which is to serve as a model for a harmonious relationship between humans and nature, that sales of products are functioning as part of the local economy, and that products have become established as local brands.

(2) Inheritance and fostering of traditional crafts and food culture

Indicator 1: Number of organisations inheriting weaving handiwork and number of members of the organisations

- Maintaining or increasing these numbers indicates that the tradition of weaving handiwork has been inherited.

Indicator 2: Number of accommodations and restaurants that serve traditional cuisine

- Maintaining or increasing this number indicates that the food culture of the Tadami region has been inherited, and has taken root as a tourism resource.

Indicator 3: Number of times classes for learning traditional cuisine held

- An increase in this number indicates that opportunities to learn about the food culture of the Tadami region have been provided, and that momentum for the inheritance is high.

(3) Fostering and promotion of eco-tourism and green tourism

Indicator 1: Number of people accepted for farm stays and educational travel

- Representative green tourism initiatives in the Tadami BR are farm stays and educational travel, and an increase or decrease in the number of people accepted for them is an indicator of the promotion of green tourism in the Tadami BR.

Indicator 2: Number of ecotours conducted and number of participants

- The number of ecotours conducted with guides is an indicator of the promotion of eco-tourism in the Tadami BR.

Indicator 3: Number of Tadami Town official nature guides

- An increase or decrease in the number of Tadami Town official nature guides is affected by the degree of eco-tourism promotion by Tadami Town.

(4) Fostering and promotion of environmentally friendly agriculture

Indicator 1: Number of examples of environmentally friendly agricultural infrastructure development

- An increase in this number indicates that environmentally friendly agricultural infrastructure development has been promoted.

Indicator 2: Number of cases of green agriculture certification, such as certification of organic agriculture or Fukushima Prefecture environmental impact reduction project implementation plan

- An increase in this number indicates that environmentally friendly agriculture has been promoted.

(5) Establishment of sustainable forest administration

Indicator 1: Forest area covered by forest operation plan

- A forest operation plan for a private forest is a five-year plan prepared by a “forest owner” or a “person entrusted with forest operation” in accordance with the Forest Act, concerning management and protection of an integrated forest managed by the owner or the person entrusted with forest operation himself/herself. The purpose of the plan is to ensure that the diverse functions of the forest are fully exerted through efficient forest management and appropriate forest protection based on the plan. Therefore, an increase in the forest area covered by this plan is one of the indicators of sustainable forest administration.

Indicator 2: Area of forest with the forest certification

Indicator 3: Number of processing and distribution processes of wood with the forest certification

- An increase in the number of cases of FM (Forest Management) certification which certifies forest management and CoC (Chain of Custody) certification which certifies management of processing and distribution processes under the Forest Certification System, which aims to promote sustainable forest use and protection by attaching certification marks to wood and others produced from properly managed forests is one of the indicators of sustainable forest administration and management.

For national forests in the Tadami BR, no indicators have been developed to evaluate sustainable forest management. However, the following forest handling policies and measures have been established by reference to the seven criteria (54 indicators) presented in the Montreal Process, in which Japan participates (the following is an excerpt from the 6th Regional Administration and Management Plan (Aizu Forest Planning Area)).

a. Conservation of biodiversity

In order to conserve a variety of forest ecosystems in accordance with regional characteristics, the soundness of forests shall be secured by promoting thinning, etc., forests in which rare wildlife grows and inhabits shall be appropriately protected, and proper consideration shall be given when management is conducted. Furthermore, efforts shall be made to maintain and improve biodiversity through, for example, changing planted forests to mixed coniferous-broadleaved forests or broad-leaved forests, or conservation and restoration of habitats of wildlife and areas around riparian forests along streams.

b. Maintaining production capacity of forest ecosystems

In order to maintain vitality of forests and develop sound forests, proper forest maintenance, such as thinning, and appropriate renewal after regeneration cutting shall be conducted for wood production that also fulfils public beneficial functions.

c. Maintaining soundness and vitality of forest ecosystems

In order to prevent forest degradation due to external factors, forests shall be conserved from wild birds and animals, forest fires, etc., and damaged forests shall be restored.

d. Conservation, maintenance, etc. of soil and water resources

In order to protect forests from erosion, etc. and to recharge water resources nurtured by forests, maintenance and restoration of forests damaged by mountain disasters and forest conservation necessary to maintain their public beneficial functions shall be conducted, and in forest management, the period of being a state of bare land shall be reduced and forests along ridges and streams shall be maintained.

e. Maintaining contribution of forests to the global carbon cycle

In order to secure forests that serve as sinks and reservoirs of carbon dioxide, accumulation of carbon dioxide in forests shall be maintained and improved, and age class structures shall be levelled from the perspective of promoting the cyclic use of forest resources.

f. Maintaining and promoting long-term and multifaceted social and economic benefits that satisfy demands of the society

In order to meet expectations of the people for forests, efforts shall be made for effective exercise of multifaceted functions of forests, provision of opportunities for interaction between forests and people, such as forest bathing, forest volunteer activities and environmental education, technological development related to forest management, etc.

g. Legal, institutional and economic frameworks for forest conservation and sustainable management

In order to steadily implement the contents described in the above a. to f. and to openly administrate and manage forests as “the people’s forests,” each planning system based on the legal system related to national forests shall be appropriately operated, and furthermore, the implementation of the administration and management shall proceed while listening to the opinions of the public and the status of forest resources shall be grasped through monitoring or other means.

(6) Promotion of inland water fisheries

Indicators 1 to 3 are interrelated. Therefore, the degree of promotion of inland water fisheries should be evaluated by comprehensively examining increases and decreases in these indicators and their backgrounds.

Indicator 1: Inland water resources

- An increase or decrease in the quantity of inland water resources based on surveys has a significant impact on the promotion of inland water fisheries in the region. Appropriate river and resource management should be conducted based on this data.

Indicator 2: Amount of released fish originating from other regions

- Currently, local fishery cooperatives are releasing freshwater fish originating from other regions to maintain inland water fishery resources in accordance with the Fishery Act. In the Tadami BR, it is required to maintain and manage fishery resources utilising the forces of nature and to promote the marine product processing industry based on the aquaculture of native freshwater fish in order to realise the principles and objectives of the BR. Therefore, if inland water resources are maintained by forces of nature brought about through improvement of the river environment or by released fish originating from within the Tadami BR (However, it is believed that the native genetic resources have been almost completely destroyed by the past releasing projects. The only native species for which there is a hope of remaining genetic resources is native Japanese char), the amount of released fish originating from other regions should decrease.

Indicator 3: Number of recreational fishermen

- Recreational fishing in rivers in the Tadami BR area requires the purchase of a recreational fishing ticket issued by the local fishery cooperatives. The proceeds from the sale of recreational fishing tickets are one of the funds for the activities of the local fishery cooperatives. That is to say, the number of recreational fishing tickets sold is one of the indicators of the promotion of inland water fisheries in the Tadami BR.

Indicator 4: Designation of rivers inhabited by native Japanese char as protected rivers

- Identifying rivers inhabited by native Japanese char, which is considered to be the only species remaining as native genetic resources and designating such rivers as protected rivers with the aim of achieving inland water fisheries utilising the forces of nature not only protects local genetic resources, but also shows the potential of a future aquaculture industry utilising native resources.

(7) Making use of natural environment to develop industries and attract companies

Indicator 1: Number of companies that use local resources

- Companies that use local resources contribute to the regional economic circulation.

Indicator 2: Number of cases of industrialisation of “traditional products of ‘Tadami, the Capital of Mother Nature’”

- Industrialisation of “traditional products of ‘Tadami, the Capital of Mother Nature’” using local resources and traditional techniques in the Tadami region contributes to the realisation of regional economic circulation that takes advantage of the natural environment.

Indicator 3: Number of species of wild edible plants and mushrooms for which restrictions of distribution by the national government due to the Fukushima No.1 Nuclear Power Plant accident have been cancelled

Indicator 4: Number of species of wild birds and animals for which restrictions of distribution and consumption by the national government due to the Fukushima No.1 Nuclear Power Plant accident have been cancelled

- Indicators 3 and 4 are resources that would have been utilised as local resources if the Fukushima No.1 Nuclear Power Plant accident had not occurred, and if these resources are able to be utilised again, such utilisation will affect the possibility of developing local industries.

(8) Attracting new townspeople and interregional exchange for regional revitalisation

Indicator 1: Number of migrants

Indicator 2: Exchange population

Indicator 3: Number of interregional initiatives

- The above indicators are values that indicate the foundation of human networks that cooperate in the realisation of the principles and objectives of the BR and in the regional revitalisation. Individual activities, etc. should be evaluated to determine the extent to which such human networks have contributed to the realisation of the principles and objectives of the BR and the regional revitalisation.

(9) Landscape improvement, etc. as tourism resources

Indicator 1: Number of projects to improve landscapes to turn them into tourism resources

- This indicator indicates the number of improvements of landscapes with the aim of turning them into tourism resources.

(10) Tadami Biosphere Reserve activities support projects

Indicator 1: Number of activities to be subsidised

- The Tadami Biosphere Reserve activities support projects provide subsidies to activities, etc. based on the “Tadami Biosphere Reserve Management Plan” and the “Action Plan for the Promotion of Tadami Biosphere Reserve” formulated by the Tadami Biosphere Reserve Governance Board to promote the activities of the Tadami BR. The results of the subsidies reflect contribution to the promotion of Tadami BR activities.

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

- The Tadami Biosphere Reserve Management Plan formulated by the Tadami Biosphere Reserve Governance Board sets forth the following policy for regional promotion, development and improvement.
- “The main pillar is to protect and conserve the natural environment and biodiversity in the BR area, utilise them in sustainable manners, and realise social and economic development of the area in line with the objectives of the BR stipulated in the UNESCO MAB Programme. The traditional lifestyles, culture, industrial techniques, and crafts of the Tadami region are one of the major requirements for the designation of the Tadami region as a Biosphere Reserve, as a form of sustainable use of the natural environment and resources of the region. In the future, efforts shall be made to inherit and develop these traditions and to promote further industrialisation and regional branding by taking advantage of the regional characteristics. Efforts shall also be made to newly discover, improve and commercialise traditional lifestyles, culture and industries unique to this region.

Agriculture and forestry, which fundamentally support the local economy and the lives of residents in this region, are considered basic industries of the region, and their promotion is extremely important for the local communities. Based on the principles of the BR, efforts shall be made for development and branding of high value-added products by promoting organic agriculture with less environmental impact, cultivating local varieties, cultivating distinctive agricultural products, and improving the quality of agricultural products. With regard to the forestry, development of forests, cultivation of coniferous plantations as resources, and utilisation of unused resources shall be continued in order to achieve multifaceted functions of forests, aiming for economic efficiency of the management as a self-sustaining land industry. In addition, a regional low-carbon society shall be realised through utilisation of wood energy.

Efforts shall be made to develop eco-tourism and green tourism that take advantage of the natural environment and traditional lifestyles and culture of the region, which are attracting attention as new ways of regional tourism.

New land development and improvement shall be conducted in accordance with the legal systems related to existing land use classification in the Tadami BR area, and maximum consideration shall be given to the protection and conservation of the natural environment and biodiversity so as not to damage them, in order to enhance the values of local resources and contribute to sustainable socio-economic development of the region. In particular, with regard to National Route 289, Hachijuri Mountain Road, which is scheduled to open in 2026, measures to address issues associated with its opening, such as impacts on the natural environment, wild fauna and flora, and the right of common held by the local residents, shall be examined and implemented prior to the opening.”

- As described in 5.5, Tadami Town, the main management body of the Tadami BR, has planned and implemented measures for the development function that takes advantage of the natural environment and traditional lifestyles and culture of the Tadami BR based on this policy. However, it must be said that the effectiveness of such measures for the development function is lower than that of those for the other two functions (conservation and logistic functions), with the exception of some measures. One of the causes for this is that no continuing staff member in charge of the Biosphere Reserve has been assigned to the UNESCO Biosphere Reserve Promotion Section (which also serves as the secretariat of the Tadami Biosphere Reserve Governance Board) in charge of UNESCO Biosphere Reserve operations and located in the Tadami Town Office. One or two staff members have been assigned to this section. One of them has been continuously involved in the said operations since before the BR registration to the present, but has been in charge mainly of the projects for the conservation and logistic functions. As a result of such continuous assignment, the activities related to the conservation and logistic functions of the Tadami BR have been enhanced. On the other hand, the staff member in charge of the development function sometimes changed due to personnel transfer, or was assigned to another department concurrently, or was not assigned at all, resulting in insufficient promotion of the projects related to the development function. Furthermore, the BR projects conducted by the UNESCO Biosphere Reserve Promotion Section are pilot projects, and full-scale projects are conducted by

the divisions in charge (the divisions mainly related to the development function are the Tourism, Commerce and Industry Division and the Agriculture, Forestry and Construction Division). The second cause is that these divisions in charge were not able to strongly promote the BR projects related to the development function due to reasons such as existing projects other than those related to the BR and a personnel shortage. Therefore, in order to succeed in the development function that takes advantage of the natural environment and traditional lifestyles and culture, it is necessary to stably assign staff members in charge of the development function to the departments in charge of the UNESCO Biosphere Reserve in the Tadami Town Office, to strongly promote such BR projects that are related to the development function by the relevant departments, and to establish a system for information sharing and cooperation among these departments. At present, there is no conflict with the conservation function in the development function that takes advantage of the natural environment and traditional lifestyles and culture. On the contrary, the local communities in the Tadami BR are not able to fully utilise local resources such as the natural environment and traditional lifestyles and culture against the background of depopulation and ageing of population.

- For sustainable development (advancement) in the Tadami BR area, it is essential that the residents of the area understand the principles and objects of the BR and take the initiative in addressing development issues. The members of the Tadami Biosphere Reserve Governance Board are required not only to engage in sustainable development activities themselves, but also to encourage regional revitalisation councils, incorporated non-profit organisations, and local community groups organised in the settlements to cooperate and participate in BR activities.
- With the enactment of the “Ordinance to Protect Wild Fauna and Flora in Tadami Town,” many of new land development and improvement projects, mainly activities by private companies, are now being discussed in advance with the UNESCO Biosphere Reserve Promotion Section, which serves as a point of contact. However, since procedures for many of the projects conducted by local public bodies are fixed in conventional manners, such projects have been proceeded without the UNESCO Biosphere Reserve Promotion Section knowing the details of the projects. As a result, there were some cases resulting in the need for the UNESCO Biosphere Reserve Promotion Section to make adjustments to the projects after the cases. Such cases include those in which the natural environment that should be preserved was lost, and the local residents pointed out problems with the projects. In the future, it is important to establish a system for project coordination through the Tadami Biosphere Reserve Governance Board and the Tadami Town Office UNESCO Biosphere Reserve Promotion Section at the stage of planning new land development or improvement projects.

6. THE LOGISTIC FUNCTION:

[This refers to programs that enhance the capacity of people and organizations in the biosphere reserve to address both conservation and development issues for sustainable development as well as research, monitoring, demonstration projects and education needed to deal with the specific context and conditions of the biosphere reserve.]

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

[Investigation]

(1)

Responsible organisation: Minami-Aizu branch office of Aizu District Forest Office, the Kanto Regional Forest Office of the Forestry Agency

Programme name 1: Investigation of the Endangered Species of Wildlife (Raptors) Protection Management Strategy (2015, 2016, 2017, 2019, and 2020)

(2)

Responsible organisation: Fukushima Prefectural Minami-Aizu Construction Office

Programme name 1: Environmental survey in the basin of the Kanozu River (entrusted environmental survey (erosion control and assistance)) (2021-)

(3)

Responsible organisations: Tadami Beech Center, and Tadami Town Office UNESCO Biosphere Reserve Promotion Section

Programme name 1: “‘The Capital of Mother Nature’: An academic investigation research” subsidy project (2012-)

Programme name 2: Survey on insect fauna in Tadami Town (2014-2015)

Programme name 3: Survey on actual conditions of wetlands in Tadami Town (2014-2016)

Programme name 4: Survey on freshwater fish fauna in the basin of the Ina River (2015-2016)

Programme name 5: Survey on actual conditions of old Japanese-style houses (2016-2019)

Programme name 6: Comprehensive academic investigation of Numa-no-daira (2017-2021)

Programme name 7: Survey on distribution of native Japanese char (2013, 2015, and 2020-)

Programme name 8: Development of technology for sustainable management and administration of planted forests of Japanese cedar in heavy snowfall areas (2016-)

(4)

Responsible organisation: Education Board of Tadami Town

Programme name 1: Survey on cultural properties (2014-)

Programme name 2: Survey on Hachijuri-goe ancient road (2014-)

(5)

Responsible organisation: Tadami nature-study meeting

Programme name 1: Vegetation survey along promenades (2013-)

[Monitoring]

(1)

Responsible organisation: Fukushima Prefectural Minami-Aizu Construction Office

Programme name 1: Protection and conservation of the natural environment and biodiversity in the National Route 289, Hachijuri Mountain Road improvement project (1997-)

(2)

Responsible organisations: Tadami Beech Center, and Tadami Town Office UNESCO Biosphere Reserve Promotion Section

Programme name 1: Monitoring survey of natural forests of Japanese beech (*F. crenata*) (2012-)Programme name 2: Survey on how rich or poor the harvest of nuts of Japanese beech (*F. crenata*) (2012-)

Programme name 3: Survey on Japanese oak wilt distribution (2012-)

Programme name 4: Survey on actual habitat conditions of rare raptors (2020-)

Programme name 5: Survey for protection and conservation of the Japanese black bear (*U. thibetanus japonicus*) (2022-)

(3)

Responsible organisation: Tadami nature-study meeting

Programme name 1: Survey on *S. hukaoana* distribution (2006-)

*: No organisational changes in these types of institutions have been observed.

6.2 Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).

(For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex).

The policy on investigation and research in the Tadami Biosphere Reserve Management Plan states as follows.

“In a BR of the UNESCO MAB Programme, natural- and social-scientific academic investigation and research on the natural environment and wildlife within a BR area, and local history, folklore, culture and industries are essential for the promotion of BR projects because such investigation and research contribute significantly to the protection and conservation of the natural environment and biodiversity in the BR area, resource management, and regional socio-economic development that rely on such natural environment and biodiversity. Efforts shall be made to conduct ecosystem monitoring to clarify the natural environment and the growth and habitat trends of wildlife in the Tadami BR area, and to promote social-scientific research to clarify the characteristics of the local history, folklore, culture, etc. Furthermore, efforts shall be made to develop a system to strengthen cooperation with universities and research institutions in order to conduct comprehensive policy-based research to foster sustainable industrial activities utilising the local environment and resources.”

Investigations and monitoring conducted within the Tadami BR over the past ten years, mainly by the members of the Tadami Biosphere Reserve Governance Board are described below by theme.

(1) “The Capital of Mother Nature’: An academic investigation research subsidy programme”

Tadami Town has established “The Capital of Mother Nature’: An academic investigation research subsidy project” (2012-) to provide subsidies to researchers and research groups that conduct basic and applied research on conservation, regeneration and utilisation of biodiversity in Tadami Town and research on utilisation of sustainable ecosystem services and preservation and inheritance of history and folklore. Under this programme, a total of 62 investigation research projects on Tadami Town’s natural environment (17 projects), biodiversity (14 projects), species ecology (22 projects), folklore (5 projects) and others were adopted and conducted. The results of these projects not only provide basic data for the protection and conservation of the natural environment, biodiversity and folklore in the Tadami BR, but also contribute to the enhancement of learning opportunities for the local residents through publication of new findings. The results of the subsidised research are as shown in Table 6-1. In addition, papers, etc. on the results brought about by this subsidy programme are as listed below. Furthermore, in recent years, other BRs in Japan (e.g., Mount Hakusan BR, Minami-Alps BR and Sobo, Katamuki and Okue BR) have established investigation research

subsidy programmes similar to “‘The Capital of Mother Nature’: An academic investigation research subsidy project,” which is an example of Tadami BR’s efforts spreading to other BR efforts nationwide.

Table 6-1 Investigation research themes and researchers subsidised by “‘The Capital of Mother Nature’: An academic investigation research subsidy programme”

Fiscal year	Investigation research theme	Name of subsidised researcher	Affiliation
2012	Renewal of vegetation after large scale disturbance (Niigata and Fukushima heavy rainfall disaster in July 2011) in the mountainous riparian forest	SAKIO Hitoshi	Niigata University
		HOMMA Kosuke	
		NIKKUNI Kanako	Graduate School of Science and Technology, Niigata University
		SAITO Masato	Graduate School of Environment and Information Sciences, Yokohama National University
URYU Shinya			
	Tree distribution pattern in the area from river flow channel to a slope of heavy snowfall mountains	SAKAI Akiko	
	To determine the most favourable environment for beech to self-regenerate and dominate the other species in the natural forest	MIYASHITA Ayana	Botanical Gardens, Graduate School of Science, the University of Tokyo
	To study the wide-area distribution and growth situation of the population of <i>Lilium rubellum</i> in the Tadami area.	HAMADA Satoko OSONE Yoko	Tokyo Metropolitan University
2013	Effects of large-scale disturbance on mountainous riparian forests and initial establishment process of salicaceous tree species	SAKIO Hitoshi	Niigata University
		HOMMA Kosuke	
		NIKKUNI Kanako	Graduate School of Science and Technology, Niigata University
	Why are there many beeches even along mountain streams in Tadami? – What we can see from annual rings –	SAITO Masato	Graduate School of Environment and Information Sciences, Yokohama National University
		SAKAI Akiko	
	Study on growth conditions of individual beeches for maintenance and regeneration of beech forests – Snow covering environment	MIYASHITA Ayana	Botanical Gardens, Graduate School of Science, the University of Tokyo
		MINAMINO Ryoko	
		TATENO Masaki	
How does <i>Lilium rubellum</i> adapt to live in snowy countries?	HAMADA Satoko OSONE Yoko	Tokyo Metropolitan University	
<i>Cordyceps sinensis</i> in Tadami Town – Biodiversity of beech forests from the perspective of <i>Cordyceps sinensis</i>	MITAMURA Toshimasa	Japanese Society for Cordyceps Research	
	KAITSU Yoshitaka		
	TAKAHARA Yotaka		
	YOSHII Shigeyuki		
		HIRASAWA Kei	
“Oku-Aizu elements” What is <i>Abelia</i> (<i>Euabelia</i>) <i>ionostachya</i> ?	KATO Hidetoshi	Tokyo Metropolitan University	
A survey of aquatic macrophytes within nine ponds in Tadami-machi, Fukushima Prefecture, Japan	SYUTOH Kohtarō	Fukushima University	
	KUROSAWA Takahide		
2014		ABE Harue	Niigata University

Are snow camellia and wild camellia different species? Speciation explored from the viewpoint of morphology and genetics	MIURA Kohki SAKIO Hitoshi	Graduate School of Science and Technology, Niigata University Niigata University
Effects of nivation slopes on composition and structure of forests along mountain streams	SAKAI Akiko KONDO Hirofumi URYU Shinya	Graduate School of Environment and Information Sciences, Yokohama National University
Growth of beeches in snow covering environment	MIYASHITA Ayana TATENO Masaki	Botanical Gardens, Graduate School of Science, the University of Tokyo
A newly listed species from Tadami Town, Tadami clawed salamander <i>Onychodactylus fuscus</i>	YOSHIKAWA Natsuhiko	National Museum of Nature and Science
<i>Lilium rubellum</i> in Tadami – What three years of investigation revealed –	OSONE Yoko	Tokyo Metropolitan University
Attempts to understand distribution characteristics of landlocked salmon and Japanese char in rivers around Tadami Town and to develop field teaching materials for environmental education and ESD	MUNAKATA Arimune SUGAWARA Masanori SATO Gensuke	Miyagi University of Education Kawaraban, Miyagi Freshwater Fish Research Association Tohoku Institute of Technology
Ants in Tadami – Characteristics of ant fauna and similarities with other areas –	KITADE Osamu MOROOKA Fuki	Ibaraki University
2015	KONDO Nanami KONDO Hirofumi	Yokohama National University Graduate School of Environment and Information Sciences, Yokohama National University
Diversity of shapes of <i>Adonis ramose</i> and its factors	SAKAI Akiko	Yokohama National University
How was the choice to apply for UNESCO Biosphere Reserve made? – From case examples of Aya, Yakushima, and Tadami	TODA Emi YUMOTO Takakazu	Graduate School of Arts and Sciences, the Open University of Japan Kyoto University
Speciation of wild camellia and snow camellia in terms of morphology, ecology and genetics	MIURA Kohki SAKIO Hitoshi ABE Harue	Graduate School of Science and Technology, Niigata University Niigata University
Habitat and population genetic structure of Tadami clawed salamander: Knowing the past and thinking about the future of salamanders	YOSHIKAWA Natsuhiko	National Museum of Nature and Science
Distribution and status of <i>Salix hukaoana</i> in the Agano River system	KIKUCHI Satoshi KANAZASHI Ayako	Rare Species Conservation Study Group
Damage to beeches increases habitats of soil animals	YOSHIDA Tomohiro	Tokyo University of Agriculture and Technology
What kinds of wood are used to build old Japanese-style houses in Tadami Town?	IDA Hideyuki KODERA Daichi TSUCHIMOTO Toshikazu	Shinshu University

		YOSHIDA Taku	
		HOYANO Shigeo	
2016	Comparison of pollination styles and seed production between wild camellia and snow camellia	ABE Harue KATAYAMA Rui SAKIO Hitoshi	Niigata University
	Consideration of the present situation of Tadami Biosphere Reserve (BR) with examples of Aya and Yakushima	TODA Emi YUMOTO Takakazu	Graduate School of Arts and Sciences, the Open University of Japan Primate Research Institute, Kyoto University
	Distribution and community composition of high moors in Tadami Town	KIKUCHI Satoshi KIKUCHI Yoko	Rare Species Conservation Study Group
	Tree hollows as habitats of soil animals – Factors of their formation and structure of animal community	YOSHIDA Tomohiro	Tokyo University of Agriculture and Technology
	Air pollution environment in beech forests in Tadami, and stress diagnosis of beeches	SAITO Hideyuki	Graduate School of Agriculture, Hokkaido University
	Spring water quality survey in Tadami Town	TABATA Masako	Tokyo University of Science
	Distribution of vespine wasps in each area from the eastern to western parts of Tadami Town	MAKIHARA Hiroshi	Coleopterological Society of Japan
2017	Is there any difference between the leaves of beeches on ridges and in valleys? – Variations in tree traits on a local scale –	GOTO Akihito KONDO Hirofumi SAKAI Akiko	Yokohama National University
	Inter- and intra-individual leaf unfolding phenology of beeches in heavy snowfall area	NISHIZAKA Shiho SAKAI Akiko	Yokohama National University
	Paleovegetation of Tadami restored from pollen and fossil leaves from the Middle Miocene Fuzawa Formation	NISHIDA Harufumi LEGRAND Julien IMAGAWA Misaki	Chuo University Graduate School of Science and Engineering, Chuo University
	Analysis of genetic diversity of <i>Lilium rubellum</i> in Tadami Town and its surrounding areas	YAMAMOTO Syo OUKI Yuhei YAMADA Yue	Meiji University
	Community structure and succession series of secondary forests of broad-leaved trees in Tadami region	KIKUCHI Satoshi SUZAKI Tomomasa SUZUKI Wajiro	Rare Species Conservation Study Group
	Aquatic insect fauna in Tadami Town and its philographic position	TOJO Koji TAKENAKA Masaki	Shinshu University Interdisciplinary Graduate School of Science and Technology, Shinshu University
	2018	Effects of river disturbance on distribution of <i>Robinia pseudoacacia</i> and <i>Salix</i> spp.	NIWANO Genki SAKIO Hitoshi

	Variation of leaf unfolding date according to relative foliage height between and within individuals in beech forests in heavy snowfall area	NISHIZAKA Shiho SAKAI Akiko	Graduate School of Environment and Information Sciences, Yokohama National University
	Species composition and stand structure of <i>Trochodendron aralioides</i> forests in Tadami, at the north limit of its distribution	KIKUCHI Satoshi SUZAKI Tomomasa SUZUKI Wajiro	Rare Species Conservation Study Group
	Identifying functional substances in the plant resources of Tadami Town	MEGURO Shusaku KUWAHAEA Takaaki	Ibaraki Christian University
2019	River environment and physiological and ecological factors that affect distribution of <i>Robinia pseudoacacia</i> and <i>Salix</i> spp.	HIRAYAMA Kokoro SAKIO Hitoshi	Niigata University
	Phenotypic plasticity concerning induced defence and offence of Montane brown frog larvae and Japanese black salamander larvae under experimental conditions	SHIMIZU Koichiro GOTO Toshiya ABE Harue	Niigata University
	Why do beech leaf unfolding dates differ? – Relationships between foliage heights in beech forests and in individuals and light environment	NISHIZAKA Shiho SAKAI Akiko	Graduate School of Environment and Information Sciences, Yokohama National University
	Evaluation of functionality (antioxidative activity and digestive enzyme inhibitory activity) in plants grown in Tadami Town	MEGURO Shusaku KUWAHAEA Takaaki	Ibaraki Christian University
	Estimation of changes in beech populations in Tadami Town by genome analysis	SAKAGUCHI Shota	Graduate School of Global Environmental Studies, Kyoto University
	Conservation and utilisation of traditional ecological knowledge of biological resource use in Tadami Town	KOYANAGI Tomoyo MATSUURA Toshiya FURUKAWA Takuya KOYAMA Asuka	Tokyo Gakugei University Forestry and Forest Products Research Institute
	Estimation and conservation of genetic diversity of <i>Pogonia japonica</i> native to Tadami Town	NAGAO Kenji MINAMIYAMA Yasuhiro	Kyoto University of Education
	Diversity of long-legged flies in Tadami Town	MASUNAGA Kazuhiro	Lake Biwa Museum
2020	Verification of genetic and environmental factors related to development of mandibles in Japanese black salamander larvae	ABE Harue MURAKAMI Takatoshi	Niigata University
	Investigation of regional knowledge held by young people on the use of wild plant resources in Tadami Town	KOYANAGI Tomoyo	Tokyo Gakugei University
	Distribution, site environment and population structure of Osmund colonies in Tadami Town	MUTO Mio SAKAI Akiko KONDO Hirofumi	Yokohama National University Graduate School of Environment and Information Sciences, Yokohama National University
		HARA Keitaro	

	Creation of ecosystem map of Tadami, the Capital of Mother Nature, using satellite remote sensing and AI	HIRAYAMA Hidetaka	Tokyo University of Information Sciences
	What kinds of wood are used to build old Japanese-style houses in Tadami Town? – Elucidation and inheritance of the traditional wisdom	IDA Hideyuki	Shinshu University
	Elucidation of functional components in plant resources (Japanese butterburs, Japanese mulberries, and <i>Mitella pauciflor</i>) in Tadami Town, and application to cooking and processing	MEGURO Shusaku KUWAHAEA Takaaki	Ibaraki Christian University
2021	Distribution of Osmund population in Kinonesawa catchment in Tadami Town – Focusing on life history stage	MUTO Mio KONDO Hirofumi SAKAI Akiko	Yokohama National University Graduate School of Environment and Information Sciences, Yokohama National University
	What kinds of wood are used to build old Japanese-style houses in Tadami Town? – Summary of investigations from 2015 to 2021 and future prospects	ABE Reina OKAMOTO Seiya TSUCHIMOTO Toshikazu IDA Hideyuki	Interdisciplinary Graduate School of Science and Technology, Shinshu University Shinshu University
	Creation of ecosystem map in and around Tadami Biosphere Reserve	HIRAYAMA Hidetaka HARA Keitaro	Tokyo University of Information Sciences
2022	Distribution and life history of Osmund in Kinenosawa, Tadami Town	MUTO Mio KONDO Hirofumi KIZAWA Ryo SAKAI Akiko	Graduate School of Environment and Information Sciences, Yokohama National University
	Assessment of resources in village-vicinity mountains based on aerial photography data taken by drone	MURAKAMI Takuhiko YOSHIDA Daichi INAZUKI Rio	Niigata University
	Eating Japanese horse chestnuts – Relationship between Japanese horse chestnuts and people –	KURISHIMA Yoshiaki	Meiji University

<Papers, etc. based on the results of “‘The Capital of Mother Nature’: An academic investigation research subsidy project”>

Goto A, Kondo H, Sakai A (2019) Changing leaf traits with topographic position in *Fagus crenata*. BULLETIN of the Tadami Beech Center 7: 2-9 **(in Japanese with English summary)**

Hirayama H, Sharma RC, Hara K (2021) Examination of time-series generation method of satellite data for vegetation mapping in a cloudy region. The 42nd Asian Conference on Remote Sensing (ACRS2021)

Ida H, Sato T, Rikukawa Y, Abe R, Hoyano S, Tsuchimoto T (2023) Optimizing species selection for the structural timbers of traditional farmhouses in a snowy rural area of northeastern Japan. Ecological Research. <https://doi.org/10.1111/1440-1703.12408>

Kikuchi S, Kanazashi A, Suzuki W, Nakano Y (2017) Distribution and status of *Salix hukaoana* in the Agano River system, Japan. BULLETIN of the Tadami Beech Center 6: 30-37 **(in Japanese with English summary)**

Kitade O, Saito-Morooka F, Okano T, Urayama K (2015) Ant fauna of Tadami-machi, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 4: 47-51 **(in Japanese with English summary)**

Mitamura T, Kaitsu Y, Takahara Y, Yoshii S, Hirasawa K (2014) A survey of Cordyceps species occurring in Tadami, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 3: 40-47 **(in Japanese with English summary)**

Makino S, Kato K, Makihara H (2019) Study on distributions of vespine wasps in Tadami using bait traps (Hymenoptera, Vespidae) . BULLETIN of the Tadami Beech Center 7: 10-16 **(in Japanese with English summary)**

Meguro S, Kuwahara T (2021) Identifying functional substances in the plant resources of Tadami town, Japan. BULLETIN of the Tadami Beech Center 9: 40-45 **(in Japanese with English summary)**

Minamiyama Y, Nagao K, Akao N (2021) Estimation of genetic diversity of *Pogonia japonica* in Tadami, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 9: 26-31 **(in Japanese with English summary)**

Miyashita A, Tani T, Tateno M (2014) A method for snow cover monitoring in heavily snowed mountains. BULLETIN of the Tadami Beech Center 3: 23-28 **(in Japanese with English summary)**

Miyashita A, Minamino R, Swakami K, Katsuhima T, Tateno M (2020) (2020) Monitoring bending stress of trees during a snowy period using strain gauges. Bulletin of Glaciological Research 38: 25-38

Miyashita A, Minamino R, Tateno M (2015) Load test for strain of young beech trunks in the field condition. BULLETIN of the Tadami Beech Center 4: 42-46 **(in Japanese with English summary)**

Osone Y, Kikuchi S, Kawarasaki S (2014) Population structure and reproduction of *Lilium rubellum*: differences within natural and protected habitats. BULLETIN of the Tadami Beech Center 3: 10-16 **(in Japanese with English summary)**

Osone Y, Kikuchi S, Watanabe K, Kawarasaki S (2015) Three years of population structure monitoring in *Lilium rubellum*. BULLETIN of the Tadami Beech Center 4:15-21 **(in Japanese with English summary)**

Saito M, Sakai A (2014) Effects of topography and snow depth on the distribution of vegetation: five case-study catchments in Tadami, Japan. BULLETIN of the Tadami Beech Center 3: 2-9 **(in Japanese with English summary)**

- Sakio H, Uemura K, Nakano Y (2023) Water tolerance of seedlings and vegetative reproduction of *Robinia pseudoacacia* and *Salix* spp. branch fragments on the Ina River, Japan. *Japanese Journal of Conservation Ecology* 28: 347-357. <https://doi.org/10.18960/hozen.2225> **(in Japanese with English summary)**
- Sakio H, Matsuzawa N (2015) Driftwood retention function of riparian forest during a large flood disturbance. *Journal of the Japanese Society of Revegetation Technology* 41: 391-397. <https://doi.org/10.7211/jjsrt.41.391> **(in Japanese with English summary)**
- Suzuki W, Suzaki T, Kikuchi S, Nakano Y (2020) Species composition and stand structure of *Trochodendron aralioides* forests in Tadami, at the north limit of its distribution. *BULLETIN of the Tadami Beech Center* 8: 33-43 **(in Japanese with English summary)**
- Shutoh K, Kurosawa T (2014) A survey of aquatic macrophytes within nine ponds in Tadami-machi, Fukushima Prefecture, Japan. *BULLETIN of the Tadami Beech Center* 3: 29-39 **(in Japanese with English summary)**
- Yamamoto S, Ouki Y, Hiraki N, Yamada Y (2021) Morphological and SSR analysis to determine the genetic diversity of *Lilium rubellum* in Tadami town, Japan. *BULLETIN of the Tadami Beech Center* 9: 8-12 **(in Japanese with English summary)**
- Yoshikawa N (2015) Notes on Tadami clawed salamander *Onychodactylus fuscus* (Amphibia: Caudata: Hynobiidae) in Tadami, Fukushima Prefecture. *BULLETIN of the Tadami Beech Center* 4: 2-6 **(in Japanese with English summary)**



Photo 6-1 Field survey of Osmund by the laboratory of Yokohama National University, subsidised by the subsidy project

(2) Monitoring for conservation of the natural environment and wildlife in the Tadami BR

In the Tadami BR, various types of monitoring have been conducted to understand the natural environment and the wildlife growth and habitat trends to make use of such data for protection and conservation of and coexistence with them.

The Tadami Beech Center has set up two monitoring plots (100 m × 5 m: 0.5 ha) in a natural beech forest of the *Camellia japonica* var. *decumbens* forest floor type, which is the representative forest vegetation in the Tadami BR, in the buffer zone, and has been analysing the forest dynamics by conducting a tree census of every tree species every five years (since 2021. Suzuki et al. 2020). These monitoring plots are located adjacent to National Route 289, Hachijuri Mountain Road, and will be useful for assessing impacts of air pollution, people entering the forest, etc. due to the opening of the road. The distribution of damage caused by the wilt disease of Fagaceae trees (commonly known as Japanese oak wilt), which has invaded into the Tadami BR, has been tracked annually (since 2012. Ishikawa et al. 2019; Ishikawa et al. 2020), and the damage information has been shared with forestry-related organisations to help mitigate the damage. The Tadami Beech Center has also conducted surveys on how rich or poor the production of nuts of Japanese beeches (*F. crenata*) (since 2013. Photo 6-2) to understand the regional characteristics of nut production of Japanese beeches (*F. crenata*) in the Tadami BR, and has been using the survey results as fundamental information for achieving coexistence of the local residents and the Japanese black bears (*U. thibetanus japonicus*) because it has been pointed out that the amount of nut production is associated with the frequency of appearance of the Japanese black bears (*U. thibetanus japonicus*) in human settlements. Furthermore, the Japanese black bears (*U. thibetanus japonicus*) live in the Tadami BR area, but information on them, including their ecology, is very scarce (Nakano et al. 2020). In recent years, as the population of large mammals such as Japanese Sika deer (*Cervus nippon*) and Japanese wild boars (*Sus scrofa leucomystax*) has increased and damage to crops has become apparent, the local residents have been working to exterminate them using traps, but the number of the Japanese black bears (*U. thibetanus japonicus*) captured in these traps by mistake and exterminated has been increasing. Therefore, since 2022, camera trap surveys have been conducted in some areas of the town to obtain data on the range of a habitat and population of the Japanese black bears (*U. thibetanus japonicus*) and annual and seasonal changes in the areas of their activities, with the aim of using such data for protection and conservation of them (Photo 6-3).

<References>

Ishikawa T, Nakano Y, Okatsu Y (2020) Mass mortality of oak trees caused by ambrosia beetles in Tadami over 2 years, 2018 and 2019. BULLETIN of the Tadami Beech Center 8: 66-72 **(in Japanese with English summary)**

Ishikawa T, Suzuki W, Nakano Y (2019) Mass mortality of oak trees caused by ambrosia beetle in Tadami from 2014 to 2017. BULLETIN of the Tadami Beech Center 7: 28-38 **(in Japanese with English summary)**

Nakano Y, Ishikawa T, Suzuki W (2020) Changes in the appearance of Asiatic black bears (*Ursus thibetanus japonicus*) in residential areas in Tadami, Fukushima Prefecture, between 2016 and 2019. BULLETIN of the Tadami Beech Center 8: 44-50 **(in Japanese with English summary)**

Suzuki W, Yamamoto Y, Nakano Y (2020) Forest dynamics of the old-growth *Fagus crenata* stands at the Kinone-zawa area in Tadami. BULLETIN of the Tadami Beech Center 8: 56-65 **(in Japanese with English summary)**



Photo 6-2 Survey by the Tadami Beech Center on how rich or poor the production of nuts of Japanese beeches (*F. crenata*) using seed traps (Narato in the transition area)



Photo 6-3 Survey conducted by the Tadami Beech Center using the camera trap method for protection and conservation of the Japanese black bears (*U. thibetanus japonicus*) (in the transition area and buffer zone)

(3) Research on unexplained natural environment and biodiversity in the Tadami BR

Basic research on the natural environment and biodiversity in the Tadami BR area had been conducted through the town history editing project carried out by Tadami Town before the designation of the Tadami BR to obtain an outline of the natural environment and biodiversity. On the other hand, such research was not sufficient, and there remained unexplained natural environment and biodiversity. Therefore, Tadami Town conducted research with the aim of understanding such unexplained parts of the natural environment and biodiversity to obtain fundamental information useful for their protection and conservation, and utilising such information for education, human resource development and regional revitalisation.

1) Survey on insect fauna in Tadami Town

Outline:

In order to clarify the unexplained insect fauna in Tadami Town, Tadami Town asked researchers from the Forestry and Forest Products Research Institute and the local residents to conduct surveys over a two-year period from 2014 to 2015 (Photo 6-4). As a result, a species in the subfamily Erotylinae, which had not yet been recorded in Fukushima Prefecture or the Aizu region, was identified (Makihara et al. 2016c). These results were reported to the local residents and others at a themed exhibition and a meeting to report results held at the “Tadami Beech and River Museum” in 2016. Furthermore, the detailed report was published in the “BULLETIN of the Tadami Beech Center” issued by the Tadami Beech Center (Makihara et al. 2016a, b, c, d, e, f; Makihara et al. 2017a, b).

<References>

Makihara H, Narukawa N, Taki H, Nakano Y, Yamagishi K, Suzuki W (2016a) Reports on insect assemblages in Tadami, Fukushima Prefecture (2) Helotidae, Erotyridae, Cryptophagidae, Cucujidae, Laemophloeidae, Tetratomidae and Melandryidae (Coleoptera). BULLETIN of the Tadami Beech Center 5: 26-37 **(in Japanese with English summary)**

- Makihara H, Taki H, Nakano Y (2016b) High population densities of *Apriona japonica* Thomson (Coleoptera, Cerambycidae) in natural beech forests of Tadami, Fukushima Pref. Forest Pests 65:77-81 **(in Japanese)**
- Makihara H, Taki H, Nakano Y, Yamagishi K, Suzuki W (2016c) Reports on insect assemblages in Tadami, Fukushima Prefecture (3) Vespidae (Hymenoptera). BULLETIN of the Tadami Beech Center 5: 38-48 **(in Japanese with English summary)**
- Makihara H, Taki H, Tunoda W, Nakano Y, Yamagishi K, Suzuki W (2016d) Reports on insect assemblages in Tadami, Fukushima Prefecture (1) Disteniidae and Cerambycidae (Coleoptera). BULLETIN of the Tadami Beech Center 5: 2-25 **(in Japanese with English summary)**
- Makihara H, Taki H, Nakano Y, Yamagishi K, Suzuki W (2016e) Reports on insect assemblages in Tadami, Fukushima Prefecture (5) Geotrupiidae and Scarabaeidae (Coleoptera). BULLETIN of the Tadami Beech Center 5: 56-63 **(in Japanese with English summary)**
- Makihara H, Taki H, Nakano Y, Yamagishi K, Suzuki W (2017a) Newly recorded Erotylidae and Cerambycidae (Coleoptera) in Tadami, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 6: 2-6 **(in Japanese with English summary)**
- Makihara H, Tsunoda W, Taki H, Nakano Y, Yamagishi K, Suzuki W (2017b) Stag beetles (Coleoptera, Lucanidae) in Tadami, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 6: 7-14 **(in Japanese with English summary)**
- Makihara H, Ohira H, Taki H, Nakano Y, Yamagishi K, Suzuki W (2016f) Reports on insect assemblages in Tadami, Fukushima Prefecture (4) Elateridae (Coleoptera). BULLETIN of the Tadami Beech Center 5: 49-55 **(in Japanese with English summary)**



Photo 6-4 Survey using a Malaise trap by researchers from the Forestry and Forest Products Research Institute

2) Survey on actual conditions of wetlands in Tadami Town

Outline:

It is known that there are several wetlands in Tadami Town, and surveys on them have been conducted as part of the Tadami Town's town history editing project. However, these wetlands have been damaged by development activities in the surrounding areas and gathering of wild animals and plants by some thoughtless people, and their value have also been damaged. The registration as a Biosphere Reserve in 2014 mandated the protection and conservation of the valuable natural environment and biodiversity in the area, and at the same time, the importance of the wetlands as a regional property was recognised. Therefore, the Tadami Beech Center, in collaboration with researchers from the Forestry and Forest Products Research Institute, conducted a vegetation survey of the wetlands throughout the town to understand their states and analyse their characteristics over a three-year period from 2014 to 2016. The Education Board of Tadami Town conducted pollen analysis to estimate paleoenvironment and paleovegetation. The results were reported to the local residents and others at a themed exhibition and a meeting to report results held at the "Tadami Beech and River Museum" in 2017. Furthermore, the detailed report was published in the "BULLETIN of the Tadami Beech Center" issued by the Tadami Beech Center. As a result of the survey, wetlands with high biodiversity and rare species were discovered (Kikuchi et al. 2018; Kikuchi et al. 2019), and on the basis of the survey results, it is expected that the wetlands will be actively protected and conserved in the future by, for example, designating them as natural monuments.

<References>

- Kikuchi S, Nakano Y, Suzuki W (2019) The wetland vegetation of Tadami, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 7: 39-55 **(in Japanese with English summary)**
- Kikuchi S, Suzuki W, Endo N, Makihara H, Watanabe S (2018) Exhibition Guide Series XI- Wetlands in Tadami – Their ecology and history. 56pp. Tadami Beech Center, Tadami **(in Japanese)**

3) Survey on freshwater fish fauna in the basin of the Ina River

Outline:

The freshwater fish fauna in Tadami Town was reported by the Tadami Town's town history editing project, but this report was not based on a detailed survey. The Ina River basin was greatly disturbed by the rise of water caused by the Niigata and Fukushima heavy rainfall disaster in July 2011, and there was a fear of a decline in the type of fish. Therefore, Tadami Town commissioned Fukushima Marine Science Museum, Public Interest Incorporated Foundation to conduct a survey on freshwater fish fauna in the Ina River basin over a two-year period from 2015 to 2016 (Photo 6-5). In the main stream of the Ina River, 18 species were confirmed, 40% of which were alien species coming from other areas of Japan, raising concerns about competition with native species (Kuraishi et al. 2017). In the tributaries, 10 species were confirmed, 30% of which were alien species coming from other areas of Japan (Harumoto et al. 2019). Moreover, fishes were not found in areas where the river flow became monotonous due to river improvement, and fishes going upstream were prevented by river crossing structures. Although the freshwater fish fauna in the Ina River basin has been clarified by this survey, follow-up surveys will be required because there are concerns about adverse effects of alien species and river improvement. The detailed results of the survey were reported in the "BULLETIN of the Tadami Beech Center" issued by the Tadami Beech Center.

<References>

- Harumoto Y, Araki M, Tokura K, Nagayama S (2019) Fish fauna of tributaries of the Ina River, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 7: 20-27 **(in Japanese with English summary)**

Kuraishi M, Harumoto Y, Fujii K (2017) Fish fauna in the Ina River, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 6: 15-25 (in Japanese with English summary)



Photo 6-5 Survey on freshwater fish fauna in the main stream of the Ina River by the staff of Fukushima Marine Science Museum, Public Interest Incorporated Foundation (in the transition area)

4) Comprehensive academic investigation of Numa-no-daira

Outline:

The “Numa-no-daira area” is located in the northwestern part of the Tadami Biosphere Reserve. Located in a landslide zone, the area has many lakes and marshes and highly natural beech forests, and it has been reported that unique species groups inhabit and grow there. Therefore, the area has been considered important for the protection and conservation of the natural environment and biodiversity in the Tadami Biosphere Reserve, but no comprehensive academic investigation has not been conducted in the area and the actual conditions of the natural environment, biota and ecosystem have not been fully understood (Nakano 2022a).

The Numa-no-daira area has been designated as a landslide hazard area in the mountain disaster hazard area, and in recent years, earthquakes have caused cracks in the ground and avalanches of earth and rocks. Tadami Town concluded a loan agreement with the Minami-Aizu branch office of Aizu District Forest Office, the Kanto Regional Forest Office of the Forestry Agency for the mountain trails that pass through the Numa-no-daira area, and allowed the public to access the nature of the Numa-no-daira to promote the attractive features of Tadami Town, but after the heavy rainfall disaster in 2011, the use of the area has been restricted to ensure the safety of the users (only use with a guide is allowed).

Under these circumstances, Tadami Town conducted a comprehensive academic investigation of earth surface changes, past vegetation changes, flora, fauna, etc. by Niigata University, Forestry and Forest Products Research Institute, Tadami Beech Center, and various experts as a plan for about five years from 2017 to 2021 in the Numa-no-daira area, for the purpose of examining appropriate ways to protect, conserve and utilise the Numa-no-daira area, and in order to accumulate scientific knowledge on the natural environment, biota and ecosystem, which is the ground for the appropriate ways (Photo 6-6).

The investigation revealed the paleoenvironment and paleovegetation (Shichi et al. 2022) of the Numa-no-daira area, and changes in aerial photographs revealed earth surface changes over the last several decades (Murakami and Shinohara 2022). In addition, aerial photography by UAV and vegetation survey revealed that eight types of vegetation, including beech forests, are distributed in a mosaic pattern in the Numa-no-daira area (Matsuura et al. 2022; Murakami and Yoshida 2022). Furthermore, a list of living things distributed in the Numa-no-daira area was made, and new distribution and endangered species were confirmed (Endo 2022; Makihara et al. 2020a, b; Makihara et al. 2021a, b; Makihara et al. 2022a, b, c, d; Nakano and Ishikawa 2022; Okatsu et al. 2022; Sakio et al. 2022; Yoshikawa 2022). A total of 107 bryophyte species, which had not been previously investigated, were recorded (Sakio et al. 2022). As for insects, species which are possibly new species, and species which were confirmed for the first time in the main land of Japan and Fukushima Prefecture were recorded (Okatsu et al. 2022). The Numa-no-daira area has a high level of biodiversity, which is believed to be attributable to its diverse topography and natural environment formed by natural disturbance caused by landslides over many years (Ohwaki et al. 2022; Sakio 2022).

These results were presented at a press conference in 2022, and a meeting to report results was held to report them to the local residents and others. Furthermore, the detailed report was published in the “BULLETIN of the Tadami Beech Center” issued by the Tadami Beech Center.

Tadami Town is discussing the handling policy for the Numa-no-daira area with the relevant organisations, and will strive to realise the protection, conservation and utilisation of the Numa-no-daira in appropriate manners in the future.

<References>

- Endo N (2022) Avifauna of the Numa-no-daira area, in Tadami Town, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 10: 87-95 **(in Japanese with English summary)**
- Makihara H, Makino S, Ishikawa T, Nakano Y (2020) Wasps of Vespinae (Hymenoptera, Vespidae) collected by malaise traps in and around Numano-Taira, Tadami, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 8: 17-23 **(in Japanese with English summary)**
- Makihara H, Makino S, Okatsu Y, Nakano Y(2021a) Wasps of Vespinae (Hymenoptera, Vespidae) collected by Malaise traps and wasp traps in and around Numa-no-Taira, Tadami town, Fukushima Prefecture in 2020. BULLETIN of the Tadami Beech Center 9: 63-67 **(in Japanese with English summary)**
- Makihara H, Ishikawa T, Nakano Y (2020) Cerambycidae (Coleoptera) collected by traps in and around Numa-no-taira, Tadami, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 8: 24-32 **(in Japanese with English summary)**
- Makihara H, Okatsu Y, Ishikawa T, Nakano Y (2021b) Dominant ground beetles (Coleoptera, Carabidae) collected by traps in and around Numa-no-Taira, Tadami town, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 9: 55-62 **(in Japanese with English summary)**
- Makihara H, Okatsu Y, Ishikawa T, Nakano Y(2022a) The pleasing fungus beetles (Coleoptera, Erotylidae, Erotylinae) collected in Numa-no-daira, Fukushima Prefecture, in 2019 and 2020. BULLETIN of the Tadami Beech Center 10: 175-182 **(in Japanese with English summary)**
- Makihara H, Okatsu Y, Nakano Y(2022b) Beetles collected via traps set at the pond side and wetlands in Numa-no-daira, Tadami Town, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 10: 161-166 **(in Japanese with English summary)**

- Makihara H, Yaki H, Okatsu Y, Nakano Y (2022c) Cerambycid fauna around Numa-no-daira—based on the results of the 2020 Malaise trap survey and comparison with other areas in Tadami Town, Fukushima. BULLETIN of the Tadami Beech Center 10: 150-160 **(in Japanese with English summary)**
- Makihara H, Taki H, Okatsu Y, Nakano Y (2022d) Chrysomelid fauna around Numa-no-daira—based on the results of the 2020 Malaise trap survey—. BULLETIN of the Tadami Beech Center 10: 167-174**(in Japanese with English summary)**
- Matsuura R, Sakio H, Yamamoto S, Kawanishi M, Nakano Y (2022) Vegetation and its diversity in the Numa-no-daira area, in Tadami Town, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 10: 37-62 **(in Japanese with English summary)**
- Murakami T, Shinohara T (2022) Analysis of ground surface changes in Numa-no-daira using multitemporal aerial photographs. BULLETIN of the Tadami Beech Center 10: 10-16 **(in Japanese with English summary)**
- Murakami T, Yoshida D (2022) Tree species classification in Numa-no-daira using UAV aerial photographs. BULLETIN of the Tadami Beech Center 10: 28-36 **(in Japanese with English summary)**
- Nakano Y(2022a) Background and Objectives of the Numa-no-daira Comprehensive Scientific Survey. BULLETIN of the Tadami Beech Center 10: 2-4 **(in Japanese with English summary)**
- Nakano Y(2022b) Survey area and its outline (location, folklore, meteorology, geology, and topography) in the Numa-no-daira Comprehensive Scientific Survey. BULLETIN of the Tadami Beech Center 10: 5-9 **(in Japanese with English summary)**
- Nakano Y, Ishikawa T (2022) Mammalian fauna of the Numa-no-daira area, in Tadami Town, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 10: 80-86 **(in Japanese with English summary)**
- Shichi K, Ikeda S, Okamoto T, Kikuchi S, Uchiyama K, Nakano Y (2022) Paleoenvironment in the Numa-no-daira area based on pollen analysis. BULLETIN of the Tadami Beech Center 10: 17-27 **(in Japanese with English summary)**
- Okatsu Y, Makihara H, Ohwaki A, Suzuki W, Kuroda K, Ishikawa T, Ota S, Nakano Y (2022) Insect fauna of Numa-no-daira, in Tadami Town, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 10: 105-142**(in Japanese with English summary)**
- Ohwaki A, Ishikawa T, Morita S, Okatsu Y, Nakano Y (2022) Factors affecting the diversity and distributions of carabid beetles of the old-growth forest in the Numa-no-daira area in the Tadami Biosphere Reserve. BULLETIN of the Tadami Beech Center 10: 143-149 **(in Japanese with English summary)**
- Ohwaki A, Ishikawa T, Morita S, Okatsu Y, Nakano Y, Sakio H (2023) The effects of heterogeneity created by treefall, landslide, and stream on ground beetle assemblages in a primary beech forest. *Forest Ecology and Management* 547: 121394. <https://doi.org/10.1016/j.foreco.2023.121394>
- Sakio H (2022) Review of the research at Numa-no-daira in Tadami Town, Fukushima Prefecture—natural disturbance and biodiversity. BULLETIN of the Tadami Beech Center 10: 183-190 **(in Japanese with English summary)**
- Sakio H, Yamamoto S, Kawanishi M, Nakano Y, Shutoh K, Maruo F (2022) The flora of plants at Numa-no-daira in Tadami Town, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 10: 63-79 **(in Japanese with English summary)**

Yoshikawa N (2022) Amphibians and Reptiles of the Numa-no-daira area, Tadami Town, Fukushima Prefecture.

BULLETIN of the Tadami Beech Center 10: 96-104 (in Japanese with English summary)



Photo 6-6 Commemorative photo taken during a vegetation survey around the Nigori-numa (muddy marsh) in the Numa-no-daira area (2019)

(4) Research and ecosystem monitoring in development activities, etc.

1) Research and monitoring in national forestry projects

As described in 2.4.6, in order to conserve the habitat of raptors, which are rare species of wild fauna and flora, the Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office of the Forestry Agency commissioned an organisation with knowledge of the ecology and research of raptors, etc. to conduct research on raptors living in the national forests in the Minami-Aizu district to understand their habitat and breeding situations. The results of the research have been reflected in the implementation of national forestry projects. The research targeted raptors designated as “rare species or endangered species.”

2) Research and monitoring for the opening of National Route 289, Hachijuri Mountain Road

A new road (National Route 289, Hachijuri Mountain Road) that runs through the buffer zone in the northwestern part of the Tadami BR is being constructed by the Nagaoka National Highway Office of the Ministry of Land, Infrastructure, Transport and Tourism and the Fukushima Prefectural Minami-Aizu Construction Office. The Fukushima Prefectural Minami-Aizu Construction Office, which is a member of the Tadami Biosphere Reserve Governance Board, conducted surveys on mammals, reptiles and amphibians as environmental monitoring for the road opening, and based on the results, is working to avoid or reduce impacts of the road project on ecosystems. Furthermore, a monitoring survey on rare raptors has been continued to check their nesting and breeding status, and the road construction has been carried out with consideration for the conservation of them with the aim of achieving coexistence with rare raptors.

Tadami Town has been conducting surveys on rare raptors (Photo 6-7, Ota et al. 2021), amphibians and freshwater fish to supplement the above-described monitoring conducted by the Fukushima Prefectural Minami-Aizu Construction Office. The results have been shared with the Fukushima Prefectural Minami-Aizu Construction Office to help protect

and conserve the natural environment and wildlife during the road construction. These surveys by Tadami Town are important and effective activities in maintaining and enhancing the functions of the BR.

These surveys will continue to be conducted after the road is opened to assess impacts of road use on the surrounding environment and wildlife, and necessary measures will be taken as appropriate.

<References>

Ota S, Matsui M, Shibakouji H, Nakano Y, Yokoyama R (2021) *Aquila chrysaetos japonica* survey in 2020 in Tadami town, Japan. BULLETIN of the Tadami Beech Center 9: 32-39 (in Japanese with English summary)



Photo 6-7 Survey on rare raptors by the rare raptor survey group of the Tadami Beech Center

3) Environmental survey in erosion control project

The Fukushima Prefectural Minami-Aizu Construction Office conducted a fauna and flora survey (outsourced to an external survey company) in a planned construction site in an erosion control project in the Tadami BR to understand the current growth and habitat environment and to conserve it in the planning and implementation of the erosion control project.

4) Monitoring in the management of hydroelectric dam

As described in “Establishment of sediment storage area in the basin of the Gamou River for disposal of dredged sediment from the dam lake (in the transition area)” in 4.1, Electric Power Development Co., Ltd. is dredging sediment deposited in the Taki Regulating Reservoir located in the Tadami River in order to prevent flood damage due to rising flood levels caused by sediment deposition. On the other hand, since 2010, Electric Power Development Co., Ltd. has been conducting surveys on the habitat status of aquatic life to understand impacts of sediment dredging on aquatic life such as fishes and benthic organisms inhabiting the regulating reservoir and the tributaries flowing into it. In recent years, the company has been conducting surveys in cooperation with the Ihoku District Non-contribution Fishery Cooperative, which holds the fishery right for inland waters to be surveyed, and sharing the survey results with it.

Furthermore, rare raptors inhabit and breed around the Otori Dam upstream of the Tadami River, and the dam management company, Electric Power Development Co., Ltd., is monitoring the area to avoid any impact of its own business on the habitat and breeding of rare raptors in order to ensure conservation of them.

(5) Research on the history, folklore and culture in the Tadami BR

1) Survey on actual conditions of old Japanese-style houses

Outline:

In Tadami Town, there are many old Japanese-style houses that are over 100 years old, typified by umaya-chumon-zukuri style private houses (L-shaped houses) with stables for keeping horses indoors. It can be said that these old Japanese-style houses form a representative landscape of the area and are important cultural properties for handing down traditional lifestyles and culture of the residents. On the other hand, at present, these old Japanese-style houses are rapidly disappearing because they are being renovated or rebuilt due to changes in traditional lifestyles of the residents or deterioration of the houses, or because those which have become vacant as a result of depopulation and ageing of population and are no longer able to be maintained are being demolished. This means that not only the unique landscape of Tadami Town, including the old Japanese-style houses, will be lost, but also their cultural value will be lost without being understood due to the fact that no comprehensive research on old Japanese-style houses has been conducted to date. Under these circumstances, it was required to survey and understand the actual conditions of old Japanese-style houses in the town and to conserve individual old Japanese-style houses.

In 2015, the Faculty of Education of Shinshu University investigated the relationship between the tree species of building materials of old Japanese-style houses in Tadami Town and the forest vegetation around the settlements using the “‘The Capital of Mother Nature’: An academic investigation research subsidy.” Since Tadami Town was aware of the above issues, it commissioned Shinshu University to conduct investigation research on the distribution of old Japanese-style houses in the town and the characteristics of individual old Japanese-style houses from the following year, 2016 to 2019, with the aim of obtaining basic data for considering conservation measures for individual old Japanese-style houses in the town (Photo 6-8). As a result, 157 houses (as of 2017) were confirmed in the town, and when the tree species of building materials were determined, it became clear that trees cut down in the forests around the settlements were used for old Japanese-style houses as appropriate according to the characteristics of each tree species, making it clear that the old Japanese-style houses are deeply related to the surrounding vegetation (Ida 2020; Ida et al. 2023). The results were presented to the local residents and others at a themed exhibition and a meeting to report results held at the “Tadami Beech and River Museum” in 2018. Furthermore, the contents of the themed exhibition were published as a series of themed exhibition booklets published by the Tadami Beech Center. The results were also published in an international academic journal.

In 2023, a detailed survey will be conducted on an old Japanese-style house (Meguro House) that can be used as an accommodation facility and is located in a campsite facility owned by Tadami Town in the Tadami BR area, and explanatory panels, etc. will be installed in the old Japanese style house so that users can learn the characteristics of the old Japanese-style houses in Tadami Town.

<References>

- Ida H (2020) Exhibition Guide Series XIV – What kinds of wood are used to build old Japanese-style houses in Tadami Town? – Their architectural styles and species of wood used. 36pp. Tadami Beech Center, Fukushima
- Ida H, Sato T, Rikukawa Y, Abe R, Hoyano S, Tsuchimoto T (2023) Optimizing species selection for the structural timbers of traditional farmhouses in a snowy rural area of northeastern Japan. *Ecological Research*. <https://doi.org/10.1111/1440-1703.12408>



Photo 6-8 Old Japanese-style house survey by Shinshu University

2) Excavation of Miyamae ruins

Outline:

From 2014 to 2017, the Education Board of Tadami Town conducted an excavation investigation of the Miyamae ruins, which were the planned construction site for the main building of the Tadami Town Office in accordance with the New Tadami Town Office Main Building Construction Plan (Education Board of Tadami Town 2014; Education Board of Tadami Town 2017).

As a result, it was found that the Miyamae ruins were mainly from the last part of the Jomon period to the early Yayoi period. In addition, valuable obsidian, small beads and flat beads, which were rarely excavated in Tadami Town, were also excavated, and when production area identification was conducted, it was found that they were from areas close to production areas in the Chubu and Hokuriku regions of the main island of Japan, providing valuable materials for studying trade at that time. Furthermore, pollen analysis was conducted to clarify the paleovegetation at that time.

<References>

Education Board of Tadami Town (2013) Tadami Cultural Heritage survey report No. 19, “Report on Exploratory Excavation Investigation of Ruins in Tadami Town” Miyamae Ruins and Kumakura Tateato Site. Education Board of Tadami Town, Fukushima **(in Japanese)**

Education Board of Tadami Town (2017) Tadami Cultural Heritage survey report No. 22, “Report on Excavation Investigation of Miyamae Ruins – Report on Excavation Investigation Associated with New Tadami Town Office Building Construction.” Education Board of Tadami Town, Fukushima **(in Japanese)**

3) Bibliographic survey of the books of the Harada family of doctors

Outline:

The Harada family was a family of doctors in Kurotani, Tadami Town. In the early modern period, the family members studied Chinese medicine which is the traditional medicine of China and Japan, as well as Chinese characters which are thought and study that support Chinese medicine, being active as both doctors and men of letters. The Harada family has owned many books and documents to this day, and the Education Board of Tadami Town conducted a bibliographic survey of the books of the Harada family of doctors from 2014 to 2015.

As a result, the books owned by the Harada family were found to be important cultural resources that revealed settlement-dwelling doctors in the early modern Japanese medical history and culture and intellectuals in settlements in the early modern period (Education Board of Tadami Town 2016). In particular, from among them, medieval manuscripts such as “Jinno Shotoki” (a history book established in the 14th Century), which was transcribed in 1597, were discovered, and they were in a good condition with the years of establishment written clearly on them, and highly valuable as cultural properties (Education Board of Tadami Town 2020). “Jinno Shotoki, Tadami Transcript” was designated as a Fukushima Prefecture-Designated Important Cultural Property in 2018.

<References>

Education Board of Tadami Town (2016) Tadami Cultural Heritage survey report No. 21, “Catalogue of Books of the Harada Family of Doctors”. 293pp. Education Board of Tadami Town, Fukushima **(in Japanese)**

Education Board of Tadami Town (2020) Tadami Cultural Heritage survey report No. 23, “Jinno Shotoki, Tadami Transcript – Colour Photographic Reproduction, Abridged Edition, and Commentary”. 273pp. Education Board of Tadami Town, Fukushima **(in Japanese)**

4) Survey on Hachijuri-goe ancient road

Outline:

The Hachijuri-goe (Hachijuri Mountain Road) used to be an important trade route connecting Tadami Town and Sanjo City, Niigata Prefecture. The route has changed over time, and mainly three routes have been confirmed: a road renovated in 1843 (the ancient road); a road cut in 1881 (the middle road); and a road cut in 1894 (the new road). The new road was selected as one of the 100 best historical roads by the Agency for Cultural Affairs. The Education Board of Tadami Town has been conducting research and improvement of the entire road since 2014 in cooperation with Sanjo City and Uonuma City, Niigata Prefecture, through which the Hachijuri Mountain Road runs, so that it can be properly preserved and utilised (Tadami Town Forest Owners’ Cooperative 2014; Tadami Town Forest Owners’ Cooperative 2016). Tadami Town aims to complete the research and improvement by 2026, and after that to receive a government designation of the road as a historical site.

<References>

Tadami Town Forest Owners’ Cooperative (2014) Implementation Report of the Comprehensive Survey on Hachijuri Mountain Road **(in Japanese)**

Tadami Town Forest Owners’ Cooperative (2016) Report on Hachijuri Ancient Road Survey (Present-State Survey) Project **(in Japanese)**

(6) Comprehensive policy-based research to foster sustainable industrial activities utilising the local environment and resources

1) Survey on distribution of native Japanese char

Outline:

In aiming to develop inland water fisheries utilising the forces of nature, the only species that seems to remain as native genetic resources is the native Japanese char (*Salvelinus leucomaenis pluvius*). However, the native Japanese char is thought to be on the verge of extinction because the rivers where they inhabit are limited due to the cultured fish releasing projects in the past. Therefore, Tadami Town has been conducting a survey since 2013 to identify rivers inhabited by the native Japanese char in cooperation with Western Minami-Aizu Non-contribution Fishery Cooperative, Ihoku District Non-Contribution Fishery Cooperative, local residents, Fukushima Marine Science Museum, Public Interest Incorporated Foundation, and National Museum of Nature and Science (Inaba 2014). Genetic analysis of the

Japanese char caught in the basins of the rivers has also been conducted to identify genotypes (haplotypes) of the native Japanese chars. Through this survey, rivers inhabited by the native Japanese char are identified and designated as protected rivers, which contributes to the protection of local genetic resources. Furthermore, such resource protection will lead to the possibility of an aquaculture industry utilising native resources in the future.

<References>

Inaba O (2014) Range conditions of the native Japanese char, *Salvelinus leucomanis* f. *plavius*, in the Tadami area. BULLETIN of the Tadami Beech Center 3: 67-75 (in Japanese with English summary)

2) Development of technology for sustainable management and administration of planted forests of Japanese cedar in heavy snowfall areas

Outline:

In Japan, during the period of reconstruction and high economic growth after World War II, the supply and demand of wood became tight, and natural forests of beeches (*F. crenata*), etc. were cut down in order to dramatically increase wood production in forest land, and tree species conversion from broad-leaved trees to coniferous trees was promoted. Furthermore, the fuel revolution aimed at conversion from wood energy to fossil fuels, and the planting of coniferous trees in former copses for firewood and charcoal and meadows, which lost their usefulness due to the modernisation of agriculture, were promoted politically. As a result, in the Tadami area as in other areas, planted forests of Japanese cedar (*Cryptomeria japonica*) were developed mainly in the surrounding areas of the settlements and on flat land (river terraces, and slopes of adjacent valley walls) of the main river basins.

However, in the Tadami region, one of the heaviest snowfall areas in Japan, planted forests of Japanese cedar are affected by snow accumulation, which makes nurturing work costly and makes it extremely difficult to produce high-quality wood. Furthermore, in the late 1960s, with the liberalisation of the wood imports, a large influx of inexpensive foreign wood caused a drop in the prices of domestic wood, leading to a prolonged slump in the prices, which immediately caused the domestic forestry to stagnate. In the Tadami region, forestry activities as an industry have continued to decline due to the depletion of natural forest resources and the growing nature conservation movement. As a result, most of the planted forests of Japanese cedar in the Tadami region have not been sufficiently nurtured and cultivated, making it difficult to improve their economic value as planted forests and to foster local resources.

Under these circumstances, Tadami Town launched a pilot project to develop a model forest for sustainable forestry and forest administration in the region (“Tadami Heavy Snowfall Forestry Experience and Observation Forest”) as part of the promotion of the socio-economic development of the region. Tadami Town invited the residents of the town to apply for the provision of planted forests of Japanese cedar for this “Tadami Heavy Snowfall Forestry Experience and Observation Forest” (hereinafter referred to as “Experience Forest”), and selected 1.8 hectares of forest stand to establish the Experience Forest in 2016. The Tadami Beech Center conducted tree censuses and vegetation surveys in the Experience Forest with the cooperation of volunteer staff from the Kanto Regional Forest Office (Photo 6-9), and conducted analyses based on various data to understand the current status of the forest stand and consider management and production targets and growing techniques in accordance with the forest conditions. The Experience Forest consists mainly of four different forest types (coniferous tree zone (40 years old), mixed coniferous-broadleaved tree zone, broad-leaved tree zone, and coniferous tree zone (60 years old), and in each type, the accumulated stem volume of Japanese cedar and broad-leaved trees, the Japanese cedar grade (grade of value when cut down and used) composition, and the degree of invasion of broad-leaved trees were different (Suzuki et al. 2017). Therefore, the Experience Forest was expected to be able to play a role as a model forest for setting management objectives and production targets for each forest type, and guiding the forest to the desired forest type. On the other hand, the Experience Forest is not the best model forest as a commercial forest, and it is considered necessary to set up another model forest.

<References>

Susuki W, Nakano Y, Suzaki T, Tanaka Y (2017) Tree species composition and stand structure in a *Cryptomeria japonica* plantation at a model forest for sustainable forest management in a heavy snowfall area of Tadami, Fukushima Prefecture, Japan. BULLETIN of the Tadami Beech Center 6: 46-56 (in Japanese with English summary)



Photo 6-9 Tree census in the “Tadami Heavy Snowfall Forestry Experience and Observation Forest”

3) Development of Beech Forest Blends and their utilisation in products

Outline:

In Tadami Town, beech (*F. crenata*) forests, which are the representative forest vegetation of the heavy snowfall areas in the Japanese archipelago, are spreading, and the natural environment including these beech forests has been utilised to promote the branding of “Tadami, the Capital of Mother Nature.” For example, the beech forests have been utilised for “traditional products of ‘Tadami, the Capital of Mother Nature’” and ecotours in the beech forests, but it was hoped that biological resources of the beech forests would be utilised for further local branding. Therefore, Tadami Town, while focusing on the functionality of plant species growing in the beech forests, aimed to develop Beech Forest Blends, which are moderate blends of several species of plants (leaves, branches, etc.), and to utilise them in various products such as food products. In 2022, Tadami Town commissioned the Faculty of Education of Niigata University to conduct a component survey on the functionality of plant species growing in the beech forests in Tadami Town and to develop Beech Forest Blends using such plant species.

As a result of comprehensive evaluation of the functionality as well as tastes and colours, blends of branches and leaves of Japanese beech (*F. crenata*), *Lindera umbellata* var. *membranacea*, *Lindera praecox* var. *pubescens*, and *Stachyurus praecox* were considered desirable for Beech Forest Blends. It is expected that the utilisation of the developed Beech Forest Blends in products of business operators dealing in food products in Tadami Town (e.g., tea, confectionery, and alcohol) and the sales of such products will improve the brand of “Tadami, the Capital of Mother Nature” and promote regional revitalisation utilising regional resources of the Biosphere Reserve in a sustainable manner.

On the other hand, the Tadami region has a history of traditionally gathering and utilising edible wild plants and mushrooms growing in beech forest areas. The representative product is Osmund. However, in recent years, such gathering and commercialisation have declined, and the number of traditional products has been decreasing significantly (Photo 6-10). Efforts are also required to pass down the traditional use of natural biological resources growing in beech forests and to turn products using such resources into a brand. Currently, efforts are being made by young women in the region to learn the techniques to process Osmund, which could act as a stepping stone for traditional use of resources and local branding.



Photo 6-10 Processing work of Osmund (crumpling Osmund), a traditional product of the Tadami region. Dried Osmund of the Tadami region is a national brand product. It is expected that the culture of traditional use of natural resources and the brand will be maintained and passed down under the activity policy of the Tadami Biosphere Reserve.

6.3 Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

(Collection of traditional and local knowledge)

Information on traditional knowledge in the Tadami region, such as sustainable utilisation of natural resources in common practices, has been collected and recorded through the Tadami Town’s town history editing project conducted by Tadami Town before the designation of the Tadami BR. The Education Board of Tadami Town and the Tadami Beech Center are still collecting information on such knowledge. In addition, investigation research on traditional knowledge has been conducted by external researchers through “‘The Capital of Mother Nature’: An academic investigation research subsidy project.”

(Synthesising and disseminating traditional and local knowledge)

The collected information has been published in media such as “Tadami Town Cultural Property Report” and “BULLETIN of the Tadami Beech Center.” Furthermore, related materials are displayed and explained in permanent and themed exhibitions held at museum facilities such as “Tadami Beech and River Museum,” “Tagokura Heritage Center” and “Tadami Museum of Folklore and History” so that users of the facilities can learn about them. Information on traditional knowledge is also available on the Tadami Biosphere Reserve’s website and the Tadami Beech Center’s website, blog and social media.

(Application of traditional and local knowledge to management practices of the BR)

Refer to 2.3.6.

(Utilisation of traditional and local knowledge in training and educational programmes)

- The Tadami Town official nature guide training includes training to learn traditional knowledge of the Tadami region.
- All elementary and junior high schools (three elementary schools and one junior high school) in the Tadami BR, which are members of the UNESCO ASPnet, are promoting Education for Sustainable Development (ESD) with the “Tadami Study” as its core through which the students learn traditional and local knowledge of the Tadami region. Furthermore, the Tadami Beech Center and the Education Board of Tadami Town dispatch lecturers to these elementary and junior high schools for integrated study, and provide museum facilities where explanation of traditional knowledge is provided (Tadami Beech and River Museum, Tagokura Heritage Center, Tadami Museum of Folklore and History, etc.) as places for learning.

6.4 Environmental/sustainability education. Which are the main educational institutions (“formal” – schools, colleges, universities, and “informal” services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve. Comment on organizational changes (if any) in institutions and programmes that were identified in the biosphere reserve ten or so years ago (e.g. closed down, redesigned, new initiatives). Refer to programmes and initiatives of UNESCO Associated Schools networks, UNESCO Chairs and Centers where applicable.

(Elementary schools and junior high schools)

Tadami municipal elementary and junior high schools (three elementary schools and one junior high school), which joined the UNESCO ASPnet after the designation of the Tadami BR in 2014, are promoting ESD based on the following policies.

- 1) Learning related to inheritance of traditional culture
- 2) Learning related to rediscovery of rich nature and culture
- 3) Learning related to disaster prevention and coexistence
- 4) Learning related to dissemination of what the students learnt
- 5) Promotion of local learning, “Tadami Study”
- 6) Learning to solve local issues
- 7) Learning to connect the hometown and the world from a global perspective

We believe that these efforts will contribute to the prosperous survival of our hometown, Tadami Town, and lead to the development of human resources to protect world peace.

(High schools)

- Fukushima Prefectural Tadami High School is located in the Tadami BR area, and Tadami Town has established the “Tadami Town Education and Study Programme in Mountain Village,” which accepts students from outside the town and supports their daily lives. Since 2020, Tadami High School has been implementing a project in which students find local issues through interactions with business people in the Tadami BR area and make proposals to solve them during the “Period for Comprehensive Exploration.”
- Fukushima Prefectural Aizu Gakuho High School (designated as a Super Science High School: a high school designated by the Ministry of Education, Culture, Sports, Science and Technology that provides advanced science and mathematics education to foster human resources in science and technology who can play an active role internationally in the future) has been conducting practical forest training in the Tadami BR with the support of the Tadami Beech Center.

(Vocational schools)

- The Japan College of Nature and Environment, located in Niigata City, Niigata Prefecture, has been conducting practical field training on wild fauna and flora in the fields of the Tadami BR under the guidance of the expert staff of the Tadami Beech Center.

6.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators).

Actions taken by Tadami Town

Tadami Town, the main management body of the Tadami BR, has formulated the “Action Plan for the Promotion of Tadami Biosphere Reserve” based on the “Tadami Biosphere Reserve Management Plan” formulated by the Tadami Biosphere Reserve Governance Board, and has planned and implemented the following measures for the logistic support function. The measures have generally functioned effectively, contributing to the promotion of the Tadami BR activities.

(1) “The Capital of Mother Nature’: An academic investigation research subsidy programme”

As described in 6.2 (1).

(2) Basic research on natural environment and social culture

As described in “(3) Research on unexplained natural environment and biodiversity in the Tadami BR” and “(5) Research on the history, folklore and culture in the Tadami BR” in 6.2.

(3) Training of Tadami Town official nature guides

Tadami Town has been working to train Tadami Town official nature guides who guide and explain Tadami’s natural environment and wildlife, and the number of guides has been maintained (Table 6-2). Furthermore, the Tadami Beech Center has conducted follow-up training in and outside the town to improve the quality of the official natural guides (Photo 6-11). On the other hand, the ageing of the guides is advancing, and it is necessary to train new younger guides.

Table 6-2 Changes in the number of Tadami Town official nature guides

Year	2009 onward	2013 onward	2017 onward
Persons	20	16	21



Photo 6-11 Follow-up training for Tadami Town official nature guides in a beech forest of the Shiga-highland Biosphere Reserve (2015)

(4) Support for members of the UNESCO ASPnet

Between 2015 and 2017, all elementary and junior high schools (four schools in total) in Tadami Town were certified as members of the UNESCO ASPnet. At these schools, activities as described in 6.4 have been carried out. Tadami Town supported their activities by, for example, donating books on UNESCO Biosphere Reserves in Japan to each school (Photo 6-12) and promoting exchanges between trainees from abroad and the students (Photo 6-13). In particular, for environmental learning at each school, staff members with expertise in natural science, etc. from the Tadami Beech Center have provided instructions in fields, such as “Tadami Observation Forest,” or at museum facilities (Photo 6-14). In general, ESD has been promoted in the Tadami BR.



Photo 6-12 Donation of books on BRs in Japan to Tadami Municipal Asahi Elementary School (a member of UNESCO ASPnet) (2014)



Photo 6-13 Exchange between overseas JICA trainees and students of Tadami Municipal Asahi Elementary School (2015)



Photo 6-14 Support by the Tadami Beech Center for natural environment learning for elementary and junior high schools (members of UNESCO ASPnet) in the Tadami BR area

(5) Establishment of new cultural resource centre (archive) and maintenance of Tagokura Heritage Center

Depopulation and ageing of population pose a risk for the loss of tangible and intangible local cultural properties. In order to prevent such properties from being lost or scattered, it is necessary to newly establish or maintain facilities to collect, organise and store printed materials, written records, photos and other materials that are owned and provided by individuals and that represent the identity of the region. In 2016, Tadami Town acquired the “Tagokura Heritage Center”, a private museum of history and folklore established by Wataru Minagawa from Tagokura, with the aim of preserving the history, lifestyles and culture of the former Tagokura settlement, which sank to the bottom of the lake following the construction of the Tagokura Dam, and opened it as a new facility after renovation and maintenance (Photo 6-15). The facility is managed and operated by the Tadami Beech Center, which collects, preserves and exhibits materials related to the history and culture of the Tagokura settlement or the Ishibushi and Shiozawa settlements, which were submerged due to the electric power development.

On the other hand, the Education Board of Tadami Town and the Tadami Beech Center have been collecting local cultural materials, both tangible and intangible, but some of such materials are not kept in appropriate facilities, and the local residents do not have access to such materials. Therefore, Tadami Town planned to develop a local cultural resource centre (archive) together with a library, which had not been developed in the Tadami BR, but this plan has not been realised so far.



Photo 6-15 “Tagokura Heritage Center”, which opened in 2016 to pass down the history and culture of the former Tagokura settlement and others submerged in the dam lake. It is the only museum of history and folklore about the former Tagokura settlement and it exhibits valuable materials collected by people from the settlement.

(6) Development of folk implements museum

The Education Board of Tadami Town possesses 2,333 items of the “Collections of Production Tools and Working Clothes of Aizu-Tadami,” National Important Tangible Folk Cultural Properties. In 2022, the “Tadami Museum of Folklore and History” was opened to properly store and exhibit cultural properties (Photo 6-16). On the other hand, the Education Board of Tadami Town also possesses about 9,000 pieces of folk implements, which are not designated as National Important Tangible Folk Cultural Properties, but at present, they are not preserved in a proper environment. Since the value of these folk implements is equivalent to that of National Important Tangible Folk Cultural Properties, it is desirable that they be preserved in a proper facility.



Photo 6-16 “Tadami Museum of Folklore and History” opened in July 2022

(7) Environmental education, practical training and various training using Tadami Beech Center

The Tadami Beech Center is an organisation of the Tadami Town Office, organised with the aim of conducting various activities to protect and conserve the rich natural environment and biodiversity of the Tadami region and pass down the traditional culture of the region, which relies on such natural environment and biodiversity, to the next generation, and exhibiting and explaining the materials and information on the region and disseminating the information widely in and outside the town through the attached museum facilities (Tadami Beech and River Museum, and Tagokura Heritage Center). Since the registration of the Tadami BR, the Tadami Beech Center has been positioned as a core organisation for the promotion of the BR in Tadami Town. For the last ten years, the Tadami Beech Center has been working to achieve the aim. For example, it has played a central role in activities to protect and conserve the local environment and biodiversity in accordance with the “Ordinance to Protect Wild Fauna and Flora in Tadami Town,” and has conducted surveys and research such as those mentioned above on its own, or has supported external collaborators. The findings obtained and materials collected through such surveys and research have been preserved, exhibited and explained at the “Tadami Beech and River Museum” and the “Tagokura Heritage Center” (Photo 6-17). Many of the exhibits (e.g., taxidermy animals, and folk implements) displayed at the both museum facilities were donated by the residents of Tadami Town, and the museum facilities are operated with the participation of the residents. In addition, the Tadami Beech Center has disseminated information on the natural environment and biodiversity of the Tadami region and the traditional lifestyles and culture of the residents which rely on such natural environment and biodiversity through various means including permanent and themed exhibitions at facilities such as those mentioned above, lectures and observation meetings (Photo 6-18), websites, social media, newsletters, publications, and development and sale of “traditional products of ‘Tadami, the Capital of Mother Nature’.” Furthermore, the Tadami Beech Center has specialised academic staff who have taken on a role in providing environmental education at schools and training for companies and other organisations in and outside Tadami Town (Photo 6-19). In that sense, it can be said that the Tadami Beech Center has functioned as a core organisation for the promotion of the Tadami Biosphere Reserve.



Photo 6-17 Tadami Beech Center staff explaining the exhibit at the “Tadami Beech and River Museum”



Photo 6-18 Nature observation meeting planned and operated by the Tadami Beech Center



Photo 6-19 Tadami Beech Center accepting an educational institution from outside the Tadami BR area for environmental learning (learning about beech forest in the Healing Forest)

(8) Making the Hachijuri Mountain Road a historic site, and its protection and conservation

The Hachijuri Mountain Road connecting Echigo and Aizu, which was an important arterial road for trade, has long been disused since it completed its role in response to the changes of the times, but its historical value is still significant. Since 2014, the Education Board of Tadami Town has been conducting a survey of the Hachijuri Mountain Road in cooperation with the Education Boards of Sanjo City and Uonuma City in Niigata Prefecture. The purpose of this survey is to clarify the whole picture of the Hachijuri Mountain Road, and then to improve the road to properly conserve it, and register it as a national cultural property after 2027 for its utilisation.

(9) Survey on old Japanese-style houses and their protection and management

The survey on actual conditions of old Japanese-style houses in the Tadami region was as described in “(5) Research on the history, folklore and culture of the Tadami BR” in 6.2, and the details of old Japanese-style houses in the Tadami BR were recorded. On the other hand, cases where old Japanese-style houses have to be unfortunately demolished have continued to occur, and most of the building materials from the demolished houses have been made into chips for biomass energy. It is hoped that Tadami Town will acquire and preserve these building materials and make effective use of them as property of the town in the construction of public facilities, etc.

However, the Former Residence of the Igarashi Family and the Residence of the Hasebe Family (Kanozu guardhouse site) have been designated and protected as National and Prefectural Important Cultural Properties, respectively. In particular, the Residence of the Hasebe Family, which had been a private property, was acquired by Tadami Town in 2021, and has been managed and opened to the public by the Education Board of Tadami Town (Photo 6-20).



Photo 6-20 “Residence of the Hasebe Family (Kanozu guardhouse site)” managed and opened to the public by the Education Board of Tadami Town

(10) Tadami Art Plan for Children

The Tadami Art Plan for Children was not a project planned in the “Action Plan for the Promotion of Tadami Biosphere Reserve” based on the “Tadami Biosphere Reserve Management Plan,” but was implemented by the Tadami Town Office UNESCO Biosphere Reserve Promotion Section and the Tadami Beech Center with the support of the Fukushima Museum during the period of the Action Plan. The Tadami Art Plan for Children was for children residing in Tadami Town, and a professional artist and curators of the Fukushima Museum (members of Tadami Biosphere Reserve Contributing Board) were invited to implement the Art Plan. The purpose of the Art Plan was to provide opportunities for children of Tadami Town to experience the nature and culture in Tadami Town and engage in artistic activities (in the form of a workshop) through such experience so that they can learn from the local environment and use what they have learnt to develop their future and talents. The name of the workshop was “Tool Shop in Beech Forest,” and children were invited to visit the beech forest in the Tadami region, and asked to imagine lives of creatures lurking in the forest and to create tools that the creatures might use. The works of the children were exhibited at the “Tadami Beech and River Museum,” Promotion Centres, and facilities outside the Tadami BR area (Photo 6-21).

Website of Ms. Tomoko Iwata (artist)

<http://shizenkansatsu.net/>



Photo 6-21 Top left: Walk in the beech forest; Top right: Workshop of artist and children; Bottom left: Creation of works; Bottom right: Exhibition and private viewing of works at the “Tadami Beech and River Museum”

Actions by the Nature Conservation Society of Japan

(1) Nature School for Mothers and Children

The Nature Conservation Society of Japan, a member of the Tadami Biosphere Reserve Governance Board, has been holding the “Nature School for Mothers and Children” in the Tadami BR every year since 2018 with the support of Nisshin Seifun Group Inc. This project is for mothers and their children residing in Fukushima Prefecture, and aims to deepen understanding of the importance and value of the “protection of nature” and “connection between people and nature” as part of the reconstruction support for the Great East Japan Earthquake. Although the participants are generally from outside the Tadami BR area, the project is designed to provide them with a chance to interact with the residents of the Tadami BR area, making it an opportunity for residents in and outside the area to experience the nature and culture and interact with each other. Furthermore, when applying for the Tadami BR, one of the objectives of the application was that the natural environment, lifestyles and culture of the Tadami BR and the BR-related initiatives would contribute to the reconstruction of Fukushima Prefecture from the Great East Japan Earthquake and the Fukushima Nuclear Power Plant accident, and this project is an important initiative in achieve this objective.

6.5.1 Describe the biosphere reserve’s main internal and external communication mechanisms/systems

Tadami BR's activities are published periodically or as needed on the Tadami Biosphere Reserve website managed by the Tadami Biosphere Reserve Governance Board, Tadami Town Office website, Tadami Town's public relations magazine "Koho Tadami," Tadami Beech Center website, blog, social media, newsletters, etc.

Understanding and cooperation of the stakeholders are essential to realise the principles and objectives of the BR. The Tadami BR requires effective means of information sharing and dissemination that leads to such understanding and cooperation. For the Tadami BR in the next ten years, an action plan must be prepared to realise an "open (without boundaries between the stakeholders)" BR through free and mutual information sharing and dissemination among the stakeholders.

6.5.2 Is there a biosphere reserve website? If so, provide the link.

The Tadami Biosphere Reserve Governance Board, which is responsible for liaison and coordination among the stakeholders of the Tadami BR, has a website available to the public.

Link: <http://Tadami BR.jp/>

6.5.3 Is there an electronic newsletter? How often is it published? (provide the link, if applicable).

No electronic newsletter has been published.

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

At present, the Tadami Biosphere Reserve Governance Board, which is responsible for comprehensive management of the Tadami BR and liaison and coordination among the stakeholders, does not belong to any social network.

6.5.5 Are there any other internal communication systems? If so, describe them.

There is no other internal communication system.

6.6 Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

6.6.1 Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

At the national level, the Tadami BR participates in the Japanese Biosphere Reserves Network (JBRN) to provide and share information on various BR activities and to exchange opinions. In 2018, we invited researchers from the Shinan Dadohae Biosphere Reserve in the neighbouring East Asian country of Republic of Korea, and held lectures to interact with them. In the same year, we also invited BR officials from Sarawak, Malaysia in Southeast Asia.

6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?

At present, information on new knowledge about means and investigation research of protection and conservation of the natural environment in the BR, human resource development, and regional development utilising local resources has been exchanged, and human exchanges have been made. In the future, this knowledge is expected to be applied to solving issues faced by the Tadami BR.

6.6.3 How do you intend to contribute to the World Network of Biosphere Reserves in the future and to the Regional and Thematic Networks?

The Tadami Biosphere Reserve Management Plan formulated by the Tadami Biosphere Reserve Governance Board begins with the following statement.

“The Tadami BR (1) aims for socio-economic development of the region by protecting and conserving the rich natural environment (snow and beech forests) and natural resources in this region in accordance with the principles and objectives of the biosphere reserves under the UNESCO MAB Programme. As well as by inheriting and developing local traditions, culture and industries through sustainable utilisation of such environment and resources, thereby promoting self-reliance and revitalisation of the region. The Tadami BR furthermore (2) aims to contribute to domestic and international society as a ‘model region where humans and nature co-exist’ by sharing information and human resources obtained through such efforts with BRs in Japan and abroad through the BR network and other means.”

Although the principles and objectives of the BR have not been fully achieved through various activities of the Tadami BR over the past ten years, we believe that they have contributed to promoting the functions expected of a BR. The Tadami BR, located in one of the heaviest snowfall areas in the world, has a unique natural environment and biodiversity created by its heavy snowfall environment, endangered species of wild fauna and flora, and globally important ecosystems, and new measures are being taken to protect and conserve them. The traditional lifestyles and culture of the residents that rely on such a heavy snowfall environment, natural environment and biodiversity can be seen as a model for sustainable use of local resources. The Tadami BR is striving to inherit and develop such lifestyles and culture. Furthermore, the results of investigation research in the Tadami BR not only contribute to the enhancement of scientific knowledge but also strengthen the conservation, development and logistic support functions in the Tadami BR. The properties of the Tadami BR as described above provide people in and outside the area with learning opportunities for sustainable development.

6.7 What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective?

(Monitoring and investigation research for the protection and conservation of the natural environment and wildlife)

Monitoring or investigation research of the natural environment, wildlife and ecosystems in the BR area, and their protection and conservation based on the scientific data obtained can be said to be fundamental activities to achieve the principles and objectives of the BR under the UNESCO MAB programme. For the past ten years, the Tadami Town Office has actively conducted such monitoring and investigation research with its independent revenue sources. The background to the above is that the regional development through the designation as a UNESCO biosphere reserve, which began with the launch of Tadami Town's local brand, "Tadami, the Capital of Mother Nature," is understood to have been established through support from scientific evidence obtained through the investigation research of the Tadami Town's town history editing project and the comprehensive academic investigation of beech forests by Shoichi Kawano, a professor emeritus at Kyoto University, and others. Then, based on that understanding, budgetary measures and personnel allocation have been implemented. In the future, it is necessary to return to the original objective of protecting and conserving the natural environment and wild fauna and flora, which are the basis for the existence of the local residents, based on the understanding that the monitoring and investigation research are useful for regional development from a short-term perspective. It is thought that it will become difficult for a municipality with a small fiscal scale like Tadami Town to continue to secure personnel and budgets for monitoring and investigation research in the future. Therefore, it is essential to introduce external funding and ensure cooperation and support from outside organisations in order to implement monitoring and investigation research. Specifically, financial support from the national and prefectural governments and private organisations, as well as human support from the BR network, universities, research institution, NPOs, and other organisations are required.

(Investigation research for sustainable development)

As described in "(6) Comprehensive policy-based research to foster sustainable industrial activities utilising the local environment and resources" in 6.2, Tadami Town has conducted investigation research for sustainable development several times. Although the investigation research has produced some results, they have not reached the stage where they can lead to sustainable industries. In order to further promote the investigation research, as described in 5.11, it is necessary to stably assign staff members in charge of the development function to the departments in charge of the UNESCO Biosphere reserve, to strongly promote the BR projects that are related to the development function by the relevant departments, and to establish a system for information sharing and cooperation between these departments and industrial organisations. Of course, financial measures are also required.

(Human resource development)

One of the major achievements is that elementary and junior high schools in Tadami Town joined the UNESCO ASPnet in conjunction with the registration as a UNESCO Biosphere Reserve, and the ESD and environmental education utilising the natural environment, biodiversity, and traditional lifestyles and culture in the Tadami BR area have been promoted in school education. Although the education programme is still in the process of development, it is hoped that the programme will be enhanced and developed by utilising the fields of the Tadami BR in cooperation with the Tadami Beech Center, the Education Board of Tadami Town, and human resources from within and outside the area. In addition, it is also necessary to enhance the school teachers and staff and to secure professional staff for the Tadami Beech Center and the Education Board of Tadami Town.

In terms of social education, the Education Board of Tadami Town and the Promotion Centres (community centres) have been conducting various activities. However, with the declining and ageing population, there is an urgent need to foster inheritors of traditional techniques, lifestyles and culture. Furthermore, the decline in the population of the younger generation is serious, and the lack of human resources to support local communities is a major problem. It is necessary to encourage the former residents of the town to return to the town or those who have never been residents of the town to move into the town, and to continue to promote migration and settlement of people from outside the town.

6.8 Other comments/observations from a biosphere reserve perspective.

The logistic support function is an important function to accelerate the principles and objectives of the MAB programme and biosphere reserves, which seek to achieve harmonisation between human activities and ecosystems based on scientific knowledge. Various support activities, such as monitoring, investigation research, human resource development and training, require professional competence when such activities are considered from the aspect of their contents. Therefore, it is necessary not only to assign experts with scientific knowledge to the relevant departments of the relevant organisations, but also to build a management organisation that can take advantage of such knowledge.

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

[Biosphere reserve coordination/management coordinators/managers have to work within extensive overlays of government bodies, business enterprises, and a “civil society” mix of non-governmental organizations and community groups. These collectively constitute the structures of governance for the area of the biosphere reserve. Success in carrying out the functions of a biosphere reserve can be crucially dependent upon the collaborative arrangements that evolve with these organizations and actors. Key roles for those responsible for the biosphere reserve coordination/management are to learn about the governance system they must work within and to explore ways to enhance its collective capacities for fulfilling the functions of the biosphere reserve.]

7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?

The Tadami Biosphere Reserve Governance Board, which is composed of relevant bodies and organisations, is responsible for the overall management and operation of the Tadami BR and coordination of activities and issues. The Governance Board includes all administrative agencies with administrative authorities over the relevant legal systems that secure functions to protect and conserve the core area and buffer zone (the Kanto Regional Forest Office of the Forestry Agency, the Ministry of the Environment, Fukushima Prefecture, and Tadami Town). Furthermore, the Governance Board also includes the Nature Conservation Society of Japan and the Japanese Coordinating Committee for MAB, both of which have a high level of expertise in the protection and conservation. Therefore, the functions to protect and conserve the core area and buffer zone are properly coordinated using their technical and logistical resources.

As an advisory body to the Tadami Biosphere Reserve Governance Board, the “Tadami Biosphere Reserve Contributing Board,” consisting of experts from various fields, has been organised. At the request of the Governance Board, the Contributing Board provides scientific and expert advice and recommendations on the management and operation of the Tadami Biosphere Reserve and BR projects that are planned and implemented by the members of the Governance Board.

Furthermore, the logistic support activities such as investigation research by the staff of the Tadami Beech Center with expert knowledge serve as technical or logistical resources in the overall coordination of the Tadami Biosphere Reserve.

7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

The “Tadami Biosphere Reserve Governance Board,” consisting of 23 administrative agencies, local community groups, companies and other organisations related to the Tadami BR (Table 7-1), is the highest decision-making body for the management and operation of the Tadami BR, and is responsible for promotion of the Tadami BR project, resolution of problems the project faces, and liaison and coordination among the bodies and organisations. At the plenary meetings of the Governance Board, the following matters are liaised and coordinated: (1) those related to

protection and conservation of the natural environment and biodiversity in the Tadami BR area; (2) those related to socio-economic development of the area through sustainable utilisation of the natural environment and resources in the Tadami BR area; (3) those related to academic research and human resource development; (4) those related to dissemination of information about the Tadami BR; and others. Tadami Town serves as the secretariat of the Governance Board, and the budget for the Governance Board activities is funded from Tadami Town's financial resources. The Governance Board adopts a round-table system, where the members are equally qualified, and resolutions are unanimously adopted as a general rule.

The "Tadami Biosphere Reserve Contributing Board" (17 members) (Table 7-2), organised as an advisory body to the Tadami Biosphere Reserve Governance Board and consisting of experts from various fields, provides scientific and expert advice and recommendations on the management and operation of the Tadami Biosphere Reserve and BR-related projects planned and implemented by the members of the Governance Board, at the request of the Governance Board (Figure 7-1).

The organisational structure as described above ensures proper governance of the Tadami BR. In particular, the approaches of Tadami Town, which is the main applicant of the Tadami BR, currently serves as the chairperson and secretariat of the Tadami Biosphere Reserve Governance Board, and is responsible for budgetary measures, significantly affect the governance of the Tadami BR. Tadami Town is currently working on the town development with the principles of the BR as its foundation under the 7th Tadami Town development promotion plan (the period of the plan: 2016-2025), which defines the principles, future vision, and direction of basic policies for the town development, and the plan is the only ground for Tadami Town to promote the BR. However, the plan has no legal basis, and is newly formulated every 10 years, so it is unclear whether the town will continue to formulate a plan with the principles of the BR as its foundation. The Tadami Biosphere Reserve Contributing Board has pointed out the weakness of such ground for Tadami Town to promote the BR, and has proposed the development of a stronger ground through a legal system such as an ordinance.

Table 7-1 Members of Tadami Biosphere Reserve Governance Board

No.	Name
1	Tadami Town
2	Education Board of Tadami Town
3	Minami-Aizu branch office of Aizu District Forest Office of the Kanto Regional Forest Office
4	Minami-Aizu Development Bureau of Fukushima Prefecture
5	Fukushima Prefecture Minami-Aizu Agriculture and Forestry Office
6	Fukushima Prefectural Minami-Aizu Construction Office
7	Tohoku Regional Environment Office of the Ministry of the Environment
8	Hinoemata Village
9	East Regional Headquarters, Electric Power Development Co., Ltd.
10	Tadami Branch, the Toho Bank, Ltd.
11	Tadami Town Commerce and Industry Association
12	Tadami Branch, JA Aizu-Yotsuba
13	Tadami Town Forest Owners' Cooperative
14	Ihoku District Non-contribution Fishery Cooperative
15	Western Minami-Aizu Non-contribution Fishery Cooperative
16	Tadami District Head Liaison Council
17	Asahi District Head Liaison Council
18	Meiwa District Head Liaison Council
19	Tadami District Women's Association
20	Asahi District Women's Association
21	Meiwa District Women's Association
22	Japanese Coordinating Committee for MAB
23	Nature Conservation Society of Japan

Table 7-2 Members of Tadami Biosphere Reserve Contributing Board

Name	Affiliation, post, etc.	Field of expertise
SAKIO Hitoshi	Fellow, Sado Island Center for Ecological Sustainability, Niigata University Professor Emeritus, Niigata University Representative, Botanical Academy	Forest ecology Plant ecology Forest management
SAKAI Akiko	Professor, Environmental Ecology Area, Division of Natural Environment and Information, Graduate School of Environment and Information Science, Yokohama National University	Plant ecology Evolutionary ecology Forest ecology Environmental conservation
SYUMIYA Takeharu	Head of Ecosystem Management Office, Nature Conservation Department, the Nature Conservation Society of Japan	Environmental conservation
HIRAIDE Mihoko	Food culture researcher and national registered dietitian in Fukushima	Food culture
HASEGAWA Hiroshi	Director, Fukushima Organic Agriculture Network Director, Society for Shrinking Society Research Chief Director, Research Institute for Saving Mother Earth	Organic agriculture
ITO Ryoji	Assistant Professor, Faculty of Agriculture, Niigata University	Agricultural economics
KOBAYASHI Megumi	Expert Curator, Curators Department, Fukushima Museum	Art
ARITA Hiroyuki	Former Professor, Faculty of Agriculture, Niigata University	Agricultural engineering
SAITO Syoichi	Visiting Professor, Faculty of Agriculture, Yamagata University	Forest conservation Forest science
MITAMURA Toshimasa	Research Specialist, Hama Agricultural Regeneration Research Centre, Fukushima Prefecture Agricultural Technology Centre	Applied entomology
HARUMOTO Yoshinori	Senior Engineer, Fukushima Marine Science Museum, Public Interest Incorporated Foundation	Ecological conservation Aquarium science
YOSHIKAWA Natsuhiko	Researcher, Department of Zoology, National Museum of Nature and Science	Herpetology Systematics Biogeography Conservation biology
KIKUCHI Satoshi	Head Researcher, Hokkaido Branch, Forest Research and Management Organization	Phytogeography
YOKOYAMA Ryuichi	Councillor, the Nature Conservation Society of Japan Representative, Okutone Nature Centre	Nature conservation Raptors
KANEKO Yuko	Professor, Department of British and American Literature, Faculty of Letters, Toyo University	Plant ecology Molecular biology Environmental science
MIURA Shingo	Professor Emeritus, Waseda University	Biology Animal behavioural ecology
SUZUKI Wajiro	Former Specialised Supervisor for Tadami Biosphere Reserve Promotion	Silviculture Forest ecology

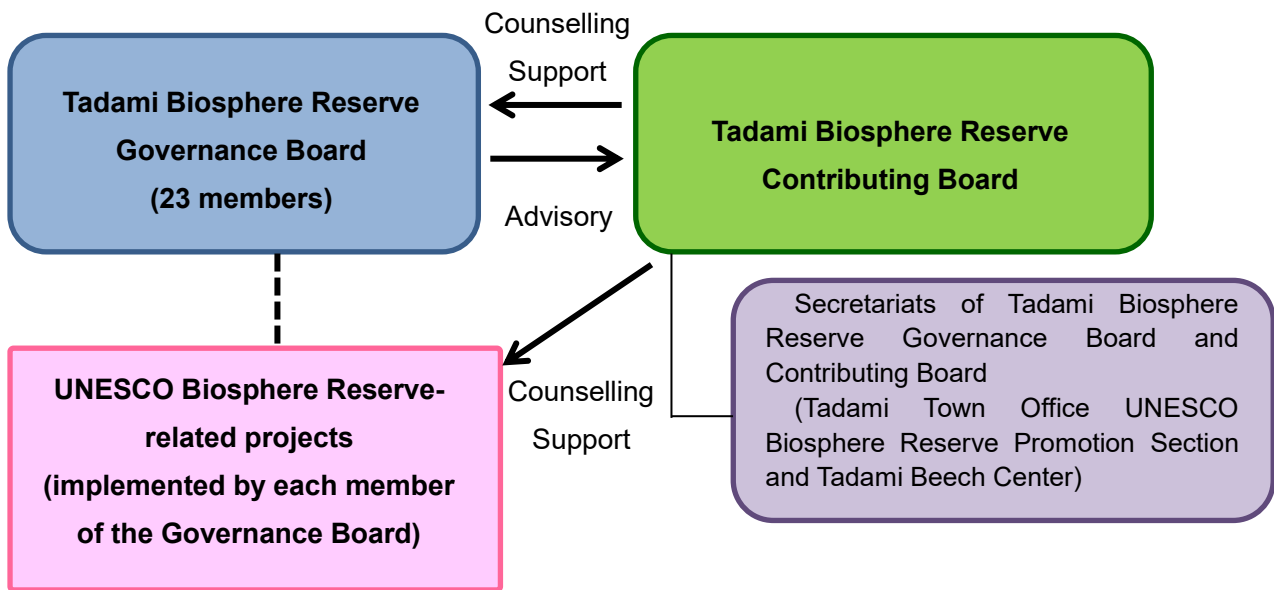


Figure 7-1 Organisation chart

7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

Under the “System of Common Use of National Forest Land” based on the Act Concerning Utilization of National Forest Land, a contract was concluded between the local residents and the national forest in the buffer zone, and the local residents have been gathering edible wild plants and mushrooms in a sustainable manner. As a result, the national forest in the buffer zone has been conserved, and the traditional lifestyles and culture of the local residents have been passed down.

7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

7.4.1 Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone?

Within the Tadami BR area, natural resources have been used in a sustainable manner, and there are no such conflicts.

7.4.2 Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.

The different administrative authorities involved in the management of the Tadami BR are members of the Tadami Biosphere Reserve Governance Board. Various issues have been coordinated, and no conflicts in competence have arisen.

7.4.3 Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?

There are no matters to be reported because there have been no conflicts as described in the previous section 7.4.2.

7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

7.5.1 Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).

The Tadami Biosphere Reserve Governance Board consists of the district head liaison councils, women's associations, industrial organisations and other organisations, which are made up of the local residents, and basically, such members are able to express their opinions on the formulation and operation of management plans at Governance Board meetings. The regulations of the Governance Board stipulate that the Governance Board meetings shall be held in a round-table format, which allows all the members to discuss matters on an equal footing, and that decisions regarding the management and operation of the Tadami BR shall be, in principle, made by unanimous agreement of all the members of the Governance Board.

7.5.2 What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?

Members of the Tadami Biosphere Reserve Governance Board who represent the local residents are as follows:

Agricultural cooperative, women's associations, commerce and industry association, forest owners' cooperative, fishery cooperatives, self-governing organisations, and business enterprises

7.5.3 Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).

There are 27 settlements in the Tadami BR, each of which has its own self-governing community organisation. Each self-governing community appoints its settlement head, who participates in the district head liaison council of the Tadami, Asahi or Meiwa District to which the settlement belongs. The district head liaison councils of these three districts are members of the Tadami Biosphere Reserve Governance Board, and their representatives attend the Governance Board meetings.

7.5.4 How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?

In principle, the Tadami Biosphere Reserve Governance Board meets twice a year. During the period under the influence of COVID-19, consultations were held in writing. The consultation periods for individual cases vary depending on the nature of the case. For example, the formulation of the Tadami Biosphere Reserve Management Plan required procedures including consultation that took about six months.

In principle, meetings of the Tadami Biosphere Reserve Contributing Board are held annually and also electronically. The consultation periods for individual cases vary depending on the nature of the case. For example, for the inquiry from the Governance Board about the impacts and countermeasures related to the opening of National Route 289, Hachijuri Mountain Road, a report was submitted after about six months of field surveys and consultations with the local residents.

7.5.5 What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?

As described in 7.5.1, the regulations of the Tadami Biosphere Reserve Governance Board stipulate that decisions made by the Governance Board regarding the management and operation of the Tadami BR shall be, in principle, made by unanimous agreement of all the members of the Governance Board.

The Tadami Biosphere Reserve Governance Board also respects advice and suggestions from the Tadami Biosphere Reserve Contributing Board. Decisions related to the Tadami BR have been generally made smoothly through these processes.

7.5.6 At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.

- The residents of Tadami Town participated in discussions at the meetings of the Study Committee of the Tadami BR which discussed policy and proposals concerning area-setting related to the application for the Tadami BR.
- The Tadami Biosphere Reserve Governance Board includes local community groups (three district head liaison councils and three women's associations) which participate in discussions on formulation and operation of management plans.

- Furthermore, Tadami Town, the main management body of the Tadami BR, has planned and implemented BR-related projects with the participation of the local residents. For example, such projects include protection observers based on the Ordinance to Protect Wild Fauna and Flora in Tadami Town, development of Tadami Observation Forest, development of Tadami Heavy Snowfall Forestry Experience and Observation Forest, training of Tadami Town official nature guides, development of “traditional products of ‘Tadami, the Capital of Mother Nature’”, “The Capital of Mother Nature”: An academic investigation research subsidy project, survey on distribution of native Japanese char, and survey on old Japanese-style houses.

7.6 Update on management and coordination structure:

7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.

There are no changes in the administrative authorities that have competence for each zone.

7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

The main applicant for the designation of the Tadami BR was Tadami Town. Currently, the Tadami Biosphere Reserve Governance Board is the highest decision-making body for the management and coordination of the Tadami BR, and its secretariat is located in the Tadami Town Office. The Tadami Biosphere Reserve Governance Board is chaired by the Mayor of Tadami Town. In the past ten years, three people have served as the Mayor of Tadami Town, and all of them understood the principles and objectives of the BR, took over its policies, and worked actively to develop the organisational structure and take budgetary measures for the promotion of the BR.

7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve? (if yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?).

Immediately after the designation of the Tadami BR, the Tadami Biosphere Reserve Governance Board, the highest decision-making body for the management and coordination of the Tadami BR, was formed in July 2014. The Governance Board consists of 23 bodies and organisations related to the Tadami BR, including administrative authorities that have competence for each zone, and business enterprises. While the Governance Board is the decision-making body for the management and operation of the Tadami BR, Tadami Town, which is a core member of the Governance Board, serves as the secretariat of the Governance Board and provides the operating funds.

7.6.4 How has the management/coordination been adapted to the local situation?

The management and coordination to be discussed at the meetings of the Tadami Biosphere Reserve Governance Board consist of those proposed by the secretariat (Tadami Town) based on a comprehensive assessment of the situation surrounding the Tadami BR, and those proposed by the members, and they are adapted to the local situation.

7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

Currently, there is no procedure for evaluating the effectiveness of the management and coordination activities. The Tadami BR Management Plan for the second period (2025-2035) will be formulated based on the evaluation of the effectiveness of the management and coordination activities during the first period (2015-2024).

7.7 Update on the management/cooperation plan/policy:

7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

As described in 2.2.7.

7.7.2 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

The Tadami Biosphere Reserve Management Plan formulated by the Tadami Biosphere Reserve Governance Board sets forth the basic policies for the appropriate management and operation of the Tadami BR in collaboration with the residents in the Tadami BR area and the related bodies and organisations while obtaining their understanding and cooperation to achieve the objectives of the activities described in 2.3.1.

The Management Plan sets forth the following two major basic policies as those for protection, conservation and utilisation.

(1) Policy on the protection and conservation of the natural environment, biodiversity and natural resources

It shall be required to understand that the natural environment, biodiversity and natural resources in the Tadami region are important foundations of the livelihood of the local residents as well as backgrounds that foster their unique lifestyles and culture, and to protect and conserve such natural environment, biodiversity and natural resources so that they can be sustained and developed in the future.

(2) Policy on the utilisation of the natural environment, biodiversity and natural resources

The traditional ways of utilising local resources by the residents within the Tadami BR area shall be inherited and developed, while striving for utilisation with due consideration to sustainability.

The Management Plan also provides guidelines for the following matters related to the BR activities:

- Matters related to protection and conservation of wildlife
- Matters related to natural environment and landscapes
- Matters related to academic investigation research
- Matters related to education, human resource development and ESD
- Matters related to regional promotion, development and arrangement
- Matters related to collaboration, etc. among residents and users
- Matters related to cooperation among related bodies and organisations

The Management Plan was formulated by the members of the Tadami Biosphere Reserve Governance Board after their final consensus formed with the advice of the Tadami Biosphere Reserve Contributing Board. There are no penal provisions regarding the binding force of the Plan.

7.7.3 Describe the role of the authorities in charge of the implementation of the plan. Describe institutional changes since the nomination form/last periodic review report. Please provide evidence of the role of these authorities.

The members of the Tadami Biosphere Reserve Governance Board, which was formed after the designation of the Tadami BR, have voluntarily formulated their own action plans based on the Tadami Biosphere Reserve Management Plan, and have taken actions to achieve the objectives of the Tadami BR. The project plans and results have been shared with the Tadami Biosphere Reserve Governance Board, and evaluated and advised by the Tadami Biosphere Reserve Contributing Board. The regulations of the Governance Board stipulate that the Tadami Town Office shall serve as the secretariat of the Tadami Biosphere Reserve Governance Board.

7.7.4 Indicate how the management plan addresses the objectives of the biosphere reserve.

The Tadami Biosphere Reserve Management Plan was formulated taking into consideration the principles and objectives of the BR. As described in 7.7.2, this plan covers the three basic functions of the BR, including the protection and conservation of the natural environment and biodiversity, the sustainable development of local communities through their sustainable use, and the provision of logistic support such as research, education and continuous monitoring, while comprehensively including the management guidelines to strengthen the roles of the BR. In particular, the plan also emphasises the need for protection, inheritance and development of the traditional lifestyles and culture of the local residents fostered by the heavy snowfall environment, which can serve as a model for sustainable development.

7.7.5 What are the progresses with regard to the guidelines of the management/cooperation plan/policy?

With regard to the protection and conservation of the natural environment and biodiversity, the buffer zone has been expanded through the expansion of the natural park in the BR area, the incorporation of national forests into protected forests, and other efforts, and in addition to this, the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” has particularly strengthened functions in the transition area. Furthermore, a forest of giant trees of pollarded (Agariko-type) Konara Oaks (*Q. serrata*), which is a valuable historical heritage that shows the relationship between local residents and forest resources, has also been conserved.

As for the logistic support, “The Capital of Mother Nature”: An academic investigation research subsidy project has been used to facilitate investigation research on the Tadami BR by outside researchers, and personal exchanges within and outside the BR area. Scientific knowledge on the Tadami BR has been steadily accumulated through investigation research conducted by the Tadami Beech Center and the Education Board. Moreover, all elementary and junior high schools in the Tadami BR have joined the UNESCO ASPnet, and Education for Sustainable Development (ESD) that utilises local museum facilities, fields and human resources such as experts has been promoted.

With regard to the sustainable development of local communities through sustainable use, with the awareness of the development of industries in accordance with the principles and objectives of the BR, commercialisation of the “traditional products of ‘Tadami, the Capital of Mother Nature’,” eco-tourism through the training of guides, and branding of rice through environmentally friendly rice production, processing and sale have been promoted.

7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

Tadami Town, the main management body of the Tadami BR, has planned and implemented various projects related to the conservation, development and logistic support functions, and the understanding and cooperation of the residents in the BR area is the driving force behind all of the projects.

Assignment of human resources with professional and comprehensive knowledge and mettle who understand the natural environment and biodiversity in the Tadami BR area and the traditional lifestyles and culture that rely on such natural environment and biodiversity, prepare, implement and verify plans to protect, conserve and sustainably utilise the natural environment, biodiversity and traditional lifestyles and culture in accordance with the principles, objectives and functions of the BR, and thereby strive to contribute to building a peaceful and sustainable society to the management side, such as the secretariat, is as important a factor in promoting the BR activities as the participation of the local residents. In addition, assignment of such human resources as described above to relevant bodies and organisations involved in the Tadami BR will further promote the BR activities, and also lead to the revitalisation of depopulated and ageing local communities. Furthermore, individuals and organisations outside the BR area that are interested in, cooperate in and support the activities of the Tadami BR, as well as experts from the Contributing Board and other institutions play a significant role in promoting the BR.

On the other hand, the obstacle that has arisen over the past ten years is that the principles and objectives of the BR are so familiar to the residents in the BR area who embody the BR on a daily basis that they are not conscious of the principles and objectives and cannot realise the value of them, which has also impeded the promotion of the BR. Furthermore, the depopulation and ageing of local communities have accelerated this situation. In addition, COVID-19 has prevented the secretariat of Tadami Biosphere Reserve Governance Board and the UNESCO Biosphere Reserve Promotion Section from having direct communication with the residents in the Tadami BR area, relevant bodies and organisations, and outside collaborators including the Tadami Biosphere Reserve Contributing Board, which brought about stagnation in the progress of the projects.

7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

(Please provide detailed information if there are any changes since the nomination form/last periodic review report).

The “7th Tadami Town development promotion plan,” the highest-level plan for the development of Tadami Town formulated in 2016, incorporates measures related to the three functions of the BR. On the other hand, the “Tadami Biosphere Reserve Management Plan” formulated by the Tadami Biosphere Reserve Governance Board and the “Action Plan for the Promotion of Tadami Biosphere Reserve” formulated by Tadami Town based on the Management Plan are formulated in a form not inconsistent with the contents of the “7th Tadami Town development promotion plan.”

8. CRITERIA AND PROGRESS MADE:

[Conclude by highlighting the major changes, achievements, and progress made in your biosphere reserve since nomination or the last periodic review. How does your biosphere reserve fulfill the criteria. Develop justification for the site to be a biosphere reserve and rationale for the zonation. What is lacking, and how could it be improved? What can your biosphere reserve share with others on how to implement sustainable development into practice?]

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

1. “Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions”.

(The term “major biogeographic region” is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

< Ecological systems representative of biogeographic regions >

- Tadami BR is located in “2-15-6 The Palaearctic Realm, Oriental Deciduous Forest” based on biogeographic regions (Udvardy 1975) prepared by IUCN (International Union for Conservation of Nature). It belongs to the Japan Sea area climate and has a complicated variety of locations and environments formed by “nivation landform,” which is due to the geological characteristics of 3-5 m heavy snowfall in the winter and green tuff bedrock with a comparatively fragile nature. Due to these locations and environments, a vegetation mosaic is formed with evergreen coniferous forest like *Pinus parviflora* var. *pentaphylla* or Japanese arborvitae (*Thuja standishii*) on the ridge parts, shrubs like *Quercus mongolica* var. *undulatifolia* or *Hamamelis japonica obtusata* on the avalanche slopes, deciduous broad-leaved forest with mainly Japanese beech (*Fagus crenata*) at the comparatively stable location where debris and soil have been deposited by avalanches on the lower part of the slopes, and riparian forests like Japanese wingnut (*Pterocarya rhoifolia*) or Japanese horse chestnut

(*Aesculus turbinata*) along the streams. This kind of landscape is quite unique in the cool-temperate zone, and it remains in an almost pristine, pristine condition over a vast area of about 40,000 ha, mainly in the core and buffer zones, and even extends into the mountains behind the villages in the transition area.

- Most of the area between the primeval mountain zone and the settlements is the mosaic vegetation made up of secondary forests of deciduous broad-leaved trees, used as copses for firewood and charcoal, and planted forests of Japanese cedar (*Cryptomeria japonica*) and Japanese larch (*Larix kaempferi*), planted on grassland after the Second World War (in the transition area and part of the buffer zone).
- In the area from highly natural mountain zone to secondary forests of deciduous broad-leaved trees, Tadami Town residents engage in hunting, gathering edible wild plants and mushrooms, woods for fuelwood and living materials; all of which are traditional sustainable use (in transition area and buffer zone).
- In the mountains in the northern part of the Tadami BR, a tourist bracken garden has been established in the secondary forest of deciduous broad-leaved trees, and the grassland has been maintained by annual burning. The Gray-pointed Pierrot (*Niphanda fusca*) (Endangered IB (EN) in the Red List of the Ministry of the Environment (2002)) inhabits in the human-influenced secondary natural environment like this (in the transition area).
- In the transition area of Tadami BR, we find the Tadami River, which flows northwards from the southwest side of the proposed site, the Ina River, which flows westward from the east side to eventually meet the Tadami River at the central part of Tadami Town, and tributaries of these rivers, and the settlements of Tadami Town scattered on fluvial terraces found along these rivers.
- In a basin of the Tadami River and Ina River of Tadami BR, there is mountainous riparian forest consisting of *Salix* spp.; such as *Salix hukaoana*, which is a Japanese endemic species as well as the endangered species, *Salix sachalinensi* and *Salix dolichostyla* ssp. *Dolichostyla*, etc. (in the transition area).
- In the transition area, cropland and residential areas are mixed or adjacent to each other along the Tadami River and Ina River systems.

2. “Be of Significance for biological diversity conservation”.

- Biological diversity is considered on three levels; ecosystem diversity, species diversity and genetic diversity (Convention on Biological Diversity; CBD).

<Diversity of ecosystems>

- The Tadami BR in one of the heaviest snowfall environments with primeval natural environments extending across 40,000 ha, where a variety of site environments generated by nivation landforms and mosaic vegetation established corresponding to each site environment are formed (refer to the previous section). Furthermore, there are animals that use and inhabit the diverse vegetation, and the diversity of the ecosystems in the Tadami BR area is high.
- The Tadami BR is an important breeding ground and habitat for the Japanese black bear (*U. thibetanus japonicus*), a large mammal at the top of the ecosystem, and the Golden eagle (*A. chrysaetos japonica*) and the Mountain Hawk-Eagle (*N. nipalensis*), raptors. Especially, both the Golden eagle (*A. chrysaetos japonica*) and the Mountain Hawk-Eagle (*S. nipalensis orientalis*) are listed as Endangered (EN) in the Red List of the Ministry

of the Environment (2020), and are designated as nationally rare species of wild fauna and flora under the Act on Conservation of Endangered Species of Wild Fauna and Flora. In general, the Golden eagle (*A. chrysaetos japonica*) is found nesting on the rock ledges of steep cliffs in mountainous areas. They hunt Japanese hare (*Lepus brachyurus angustidens*), the Copper pheasant (*Syrnaticus soemmerringii*) and such snakes as the Japanese rat snake (*Elaphe climacophora*) in open areas such as shrub zones, grass areas and denuded land next to the forest; its home range extends up to 200 km². On the other hand, the Mountain Hawk-Eagle (*Spizaetus nipalensis orientalis*) is highly dependent on the forest, nesting in large trees and hunting several small and medium size animals in the forest such as; Japanese hare (*Lepus brachyurus angustidens*), badgers (*Meles meles*), racoon dogs (*Nyctereutes procyonoides*), snakes, the Copper pheasant (*Syrnaticus soemmerringii*), etc. This large and primeval natural environment of the Tadami area, with nivation landform characteristics formed by heavy snowfall and a vegetation mosaic created by those topographies, provides two separate and ideal habitats for the Golden eagle (*A. chrysaetos japonica*) and the Mountain Hawk-Eagle (*S. nipalensis orientalis*), whose nesting environments and food sources are quite different. This demonstrates the existence of these umbrella species (raptors) are indicative of a rich ecosystem in Tadami BR.

<Diversity of species>

- In the past ten years, the basic research related to the biodiversity of the Tadami BR has been conducted several times, but no endemic species limited to the Tadami BR have been confirmed. However, in 2014, Tadami clawed salamander (*O. fuscus*), which had been found only in the northwestern part of the Tadami BR and some areas of adjacent Niigata Prefecture, was described as a new species (Yoshikawa & Matsui 2014; Photo 8-1).
- 1,449 species of vascular plants including pteridophytes, 107 species of bryophytes (mosses), 37 species of mammals, 167 species of birds, 14 species of amphibians, 10 species of reptiles, 1,189 species of insects and 34 species of fish (including introduced species, refer to the updated species list in section 9 (5)) have been confirmed.
- About 45% of the native plants (vascular plants) in Japan are endemic species and about 9% of Japanese endemic species appear in Tadami Town of the Tadami BR. In addition, there are 12 endangered species listed in the Red List of the Ministry of the Environment (about 1% of the total) and 17 endangered species listed in the Red List of Fukushima Prefecture (about 2% of the total) in Tadami Town.
- Forest wilderness in Tadami BR extends over about 70,000 ha, which are generally inaccessible to humans due to their deep and steep topography, however, the percentage of Japanese endemic species and endangered species are expected to increase once the investigation is started.



Photo 8-1 Tadami clawed salamander (*O. fuscus*), described as a new species in 2014

<Genetic diversity>

- Regarding genetic diversity, the high diversity and endemism of Japanese beech (*Fagus crenata*) and Japanese wingnut (*Ptrocrya rhoifolia*) groups in Tadami Town were confirmed by genetic analysis (Education Board of Tadami Town 2003: Education Board of Tadami Town 2004: Education Board of Tadami Town 2005).
- As a result of research on the genetic diversity of rare tree species, *Salix hukaoana*, of the Ina River basin which is the largest autogenesis ground in Japan, genetic differentiation of the group was confirmed and a range of genetic flow was also revealed (Kikuchi and Suzuki 2012).
- As a result of research on the genetic diversity of *Popognia japonica* (Near Threatened (NT) in the Red List of the Ministry of the Environment (2020)) that grows in wetlands within the Tadami BR, genetic differentiation among populations in each wetland was confirmed, and the need for conservation of native *Popognia japonica* in each wetland was revealed (Minamiyama et al. 2021).

<Rare species>

- Multiple individuals of the Golden eagle (*A. chrysaetos japonica*) (Endangered IB (EN) in the Red List of the Ministry of the Environment (2020), nationally rare species of wild fauna and flora under the Act on Conservation of Endangered Species of Wild Fauna and Flora, and natural monument designated by the national government under the Act on Protection of Cultural Properties) have been found in the mountainous area of the Tadami BR, which forms a part of the core area of the Golden eagle (*A. chrysaetos japonica*) habitats in Japan (Ota et. al, 2021).

- The Mountain Hawk-Eagle (*N. nipalensis*) (Endangered IB (EN) in the Red List of the Ministry of the Environment (2020), and nationally rare species of wild fauna and flora under the Act on Conservation of Endangered Species of Wild Fauna and Flora) is found in large numbers in the Tadami BR.
- In Tadami Town of Tadami BR is the only confirmed site in Fukushima Prefecture of the Frosted myotis (*Myotis pruinus*), which is a Japanese endemic species of bat and they are listed as Endangered (EN) in the IUCN Red List as well as Endangered (EN) in the Red List of the Ministry of the Environment (2020).
- In the riparian forest in a basin of the Tadami River/Ina River flowing in Tadami BR, rare tree species *Salix hukaoana*, which is classified as Endangered II (Vulnerable) in the Red List of the Ministry of the Environment (2020), grow in the largest numbers found in Japan. Since the growth of this tree species depends on river disturbance (snow flood), the large growth of such tree species indicates that the river environment in this basin has been conserved in a highly natural state (Tadami nature-study meeting 2012).
- Tadami Town of Tadami BR is the largest autogenesis ground of *Lilium rubellum* in Japan, which is a Japanese endemic species and found only around the Iide mountain range, Mt. Azuma and Sumondake, located in the southern part of Miyagi Prefecture and at the prefectural boundaries of Niigata, Fukushima and Yamagata Prefectures (Takahara et al. 2012). Almost all the places have grassland at the summit area, steep rocky slopes of nivation landform or the ridges of scree slopes; it is expected to be the most important growth area of a natural population in Japan. This species is classified as Near Threatened (NT) in the Red List of the Ministry of the Environment (2020) as well as in the Red List of Fukushima Prefecture (2020).

<References>

- Kikuchi S, Suzuki W (2012) Genetic diversity and its conservation in the Tadami River basin, especially *Salix hukaoana* of Odosawa. BULLETIN of the Tadami Beech Center 1: 7-11 **(in Japanese with English summary)**
- Minamiyama Y, Nagao K, Akao N (2021) Estimation of genetic diversity of *Pogonia japonica* in Tadami, Fukushima Prefecture. BULLETIN of the Tadami Beech Center 9: 26-31 **(in Japanese with English summary)**
- Tadami Town Town History Editing Committee (2001) Tadami Town history document collection No. 4, “Nature of Aizu Tadami - climate, geology and animals”. 179pp. Tadami, Fukushima Prefecture
- Education Board of Tadami Town (2003) Tadami Cultural Heritage survey report No. 9, “Academic research on forest vegetation and biological diversity of the Tadami area, Fukushima Prefecture”. 74pp. Tadami, Fukushima Prefecture
- Education Board of Tadami Town (2004) Tadami Cultural Heritage survey report No. 10, “2nd report of Academic research on forest vegetation and biological diversity of the Tadami area, Fukushima Prefecture”. 84pp. Tadami, Fukushima Prefecture
- Education Board of Tadami Town (2004) Tadami Cultural Heritage survey report No. 12, “3rd report of Academic research on forest vegetation and biological diversity of the Tadami area, Fukushima Prefecture”. 99pp. Tadami, Fukushima Prefecture
- Tadami nature-study meeting (2012) Rare tree species, *Salix hukaoana*, in the Tadami River system of Fukushima Prefecture – Report on Its distribution and group conditions -. 80pp. Tadami nature-study meeting, Tadami

Takahara Y, Watanabe K, Kurosawa T (2012) Growing conditions of *Lilium rubellum* and its conservation in Tadami Town. BULLETIN of the Tadami Beech Center 1: 2-6 (in Japanese with English summary)

Yoshikawa N, Matsui M (2014) Two new Salamanders of the genus *Onychodactylus* from Eastern Honshu, Japan (Amphibia, Caudata, Hynobiidae). Zootaxa 3866:53-78. <https://doi.org/10.11646/zootaxa.3866.1.3>

3. “Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale”.

(Including examples or learning experiences from putting sustainable development into practice).

Historically, the economic life of residents in the Tadami area has been generally supported by agriculture (including slash and burn agriculture known as “Kano”) and utilisation of the rich local natural resources such as hunting, collecting and fishing. This style of life has endured, even during the modernisation after the Meiji era, and it still exists today. Therefore, the harmonious relationship between nature and humans has always been found as an undercurrent in this local community, thus fulfilling the criteria of being a sustainable local community. Based on the inheritance and development of the existing relationship between nature and humans in the Tadami BR, we believe we can research and demonstrate approaches to sustainable development on a regional scale. Specific approaches are as described below.

<Tadami Town’s framework for sustainable development>

- In 2006, Tadami Town developed the 6th Tadami Town development promotion plan with a concept of “A town living life with beech, a town living with snow; challenge of Oku-Aizu Tadami – creation of real local value,” with a town plan utilising the inherited properties of the Tadami area such as traditional nature, history, culture, living, industry, etc., clearly separating such subjects from following the contemporary urbanised values. The 7th Tadami Town development promotion plan formulated in 2016 followed the policies of the 6th plan, and incorporated measures related to the principles and objectives of the BR and its three functions.
- In 2007, Tadami Town announced “The Capital of Mother Nature,” targeting local residents to re-recognise the value of the large natural environment of Tadami area and to inherit it to the next generation. Furthermore, in 2018, the National Beech Forest Forum was held to reaffirm the significance of the declaration of “The Capital of Mother Nature” in 2007, and to make the “2018 Declaration of ‘The Capital of Mother Nature’” that declared the determination and resolution to realise its objectives in the next ten years.

<Approaches to sustainable development>

- In 2007, Tadami Town established the “Tadami Beech Center” as a core organisation for actualising the 7th Tadami Town development promotion plan. The Tadami Beech Center functions as a core organisation for promoting activities of the Tadami BR through the following activities: (1) protection and conservation of the natural environment and wildlife, (2) investigation and research of the natural environment and wildlife, and the traditional lifestyles and culture of the residents that are deeply connected to them, (3) museum operation of “Tadami Beech and River Museum” and “Tagokura Heritage Center”, (4) education and training, and (5) information transmission and exchange activities, etc., of the Tadami area.
- The natural environment and wildlife in the core area and buffer zone of the Tadami BR have been protected and conserved by the existing legal system. Tadami Town enacted the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” in 2016, and has strengthened the conservation function of the transition area through cooperation with the local residents and stakeholders, which has dramatically reduced theft and capture of wild animals and plants.
- Almost the whole of the proposed core area and the buffer zone is designated as the Oku-Aizu Forest Ecosystem Reserve based on the Act Concerning Utilization of National Forest Land, and thus entering the mountains and

other activities are restricted but entering for investigation research is allowed with permission.

- “‘The Capital of Mother Nature’: An academic investigation research subsidy project,” which was started by Tadami Town in 2012, has provided subsidies to researchers and research groups that conduct basic and applied research on conservation, regeneration and utilisation of the biodiversity in Tadami Town and research on utilisation of sustainable ecosystem services. As a result, new knowledge about the natural environment, wildlife, folklore, etc. in Tadami Town have been discovered, and the results have been accumulated, presented at academic conferences, published in academic journals, and given back to the local residents. Furthermore, cooperation with universities, research institutes and other organisations has been strengthened in order to make Tadami Town a hub of academic investigation and research.
- Tadami Town has also set its own themes for issues that should be addressed by the local communities, and conducted basic research with such themes to understand the natural environment, wildlife and folklore, of which information had been insufficient, and the results have been used for the protection, conservation and utilisation of them.
- Tadami Town certified products using natural resources, agricultural products and traditional techniques in the Tadami BR as “traditional products of ‘Tadami, the Capital of Mother Nature’,” and promoted their branding. As a result, the traditional products have become representative souvenirs of the Tadami BR, and through these products, efforts have been made to inherit and develop traditional techniques, disseminate information on the natural environment, lifestyles and culture in the Tadami BR, and contribute to the local economy.
- All elementary and junior high schools (three elementary schools and one junior high school) in the Tadami BR have been approved to join the UNESCO ASPnet. ESD has been promoted at each school with local learning, “Tadami Study” at its core.

<Future approaches to sustainable development>

- The conservation and logistic support functions were generally well promoted mainly through the approaches by Tadami Town, the main management body of the Tadami BR, although there were some insufficiencies. Although there are issues of sustainability in terms of human and financial resources, it is necessary to continue to enhance these functions based on the reflection of the efforts made so far. On the other hand, as described in 5.11, there is a delay in enhancing the development function that takes advantage of the natural environment and traditional lifestyles and culture of the Tadami BR. The development function can be sufficiently enhanced by improving and enhancing the structure of Tadami Town, the main management body, and by obtaining the understanding and cooperation of the residents and stakeholders in the Tadami BR area and the external human and financial support and cooperation while utilising the resources of the conservation and logistic support functions that have been accumulated so far.
- The designation of the Tadami BR is a source of pride for the residents of the Tadami BR area, as they recognise that the natural environment of the Tadami region, the traditional lifestyles and culture that rely on it, and the efforts for the town development that they have made so far have been internationally recognised. In the depopulated and ageing local communities in the Tadami BR, the residents have high expectations for the enhancement of the development function that takes advantage of the natural environment and traditional lifestyles and culture because it has the potential to serve as a clue to regional revitalisation. If the three functions are equally enhanced in the future, the value of the Tadami BR as a model for sustainable development in mountainous areas will increase, and the pride and happiness of the residents in the area will also be enhanced. It is hoped that such a state will be shared internationally and also contribute to world peace.

4. “Have an appropriate size to serve the three functions of biosphere reserves”.

When the Tadami BR was designated in 2014, it was judged to be of an appropriate size to serve the three functions. The total area of the Tadami BR, 78,032 ha, has not changed in the last ten years. The area of the buffer zone has increased slightly and the transition area has decreased slightly, but this does not impede the fulfilment of the three functions.

The core area of Tadami BR measures 3,557 ha of forests. The ridgeline connecting Mt. Aizu-Asahidake~Mt. Maruyamadake~Mt. Tsuboiri is centrally located in the core area and mosaic vegetation of landslide scar site, herbaceous community, shrub and beech forest exists in a primeval condition on the nivation landform. Also, it's area accords with the Preservation Zone of Oku-Aizu Forest Ecosystem Reserve, which was designated considering any extension required for preserving the biological characteristics of the forest, based on the Act Concerning Utilization of National Forest Land. These steep mountainous areas are caused by the nivation landform of ridgelines, with no easy access for ordinary persons and no residence. In this manner, it is enough size and location for maintenance and conservation of the primeval forests.

The buffer zone (51,434 ha) is almost as valuable as the core area for conservation of the regional biodiversity, as it includes the existence of a mountainous landscape of heavy snowfall areas and habitats for wildlife. This zone consists mostly of national forests, but also includes a small part of the Tadami Town forest (1,498 ha) and the surface of Dam Lake (1,024 ha) managed by the Electric Power Development Co., Ltd. The buffer zone is designated as the Special Protection Zone, the Class I, II and III Special Zones of the Echigosanzan-Tadami Quasi-national Park based on the Natural Park Act, and as the Conservation and Utilisation Zone of the Oku-Aizu Forest Ecosystem Reserve and as the Aizu-Sanchi Green Corridor based on the Act Concerning Utilization of National Forest Land. The main mountains (Mt. Asakusadake and Mt. Aizu-Asahidake) have mountain trails, but there are no human settlements. In the national forests, sustainable use of forest resources is carried out by the local residents, such as gathering of edible wild plants and mushrooms, under the "System of Common Use of National Forest Land" based on the Act Concerning Utilization of National Forest Land. In addition, activities such as investigation research may be conducted with permission in accordance with the procedures stipulated in relevant laws and regulations. The size of the buffer zone is about 14 times that of the core area, providing a sufficient area to surround the core area and fulfill its role as a mechanism against any impact by humans. The buffer zone has an appropriate area to achieve both long-term conservation and non-destructive sustainable use, and is under legal control.

The transition area (23,023 ha) is a sustainable utilisation area with the functions and roles of traditional village- vicinity mountains and village land, with the scenery consisting of about 90% planted forest or copse, about 4% field or rice paddy and about 2% residential area, etc. The transition area along the Tadami River is designated as the ordinary zone of the "Echigosanzan-Tadami Quasi-national Park" based on the Natural Park Act. The transition area is inhabited by all the inhabitants of the Tadami BR. The transition area has been used by humans since the middle of the Jomon Era, and it is also convenient for the current inhabitants in terms of geography, topography and access. Therefore, sustainable utilisation of forest resources, such as utilisation of fuel and agricultural materials, gathering of edible wild plants and mushrooms, etc., have been conducted. In the entire transition area, the "Ordinance to Protect Wild Fauna and Flora in Tadami Town" is applied, and sustainable development and industrial activities are carried out. Tourism, agriculture, forestry and fisheries, which take advantage of the rich natural environment, serve as the economic base of the BR area. The "traditional products of 'Tadami, the Capital of Mother Nature'," which take advantage of the natural environment, natural resources, agricultural products, and traditional techniques in the area, symbolise the sustainable use of resources and the inheritance of traditional lifestyles and culture. Educational institutions including elementary and junior high schools, which are members of the UNESCO ASPnet, provide ESD utilising various outdoor fields and museum facilities in the Tadami BR.

As described above, the Tadami BR is considered to be of an appropriate size to serve the three functions of the BR.

5. Appropriate zonation to serve the three functions

When the Tadami BR was designated in 2014, this zonation was judged to be a zonal structure in an appropriate form. Over the ten years after the designation, the area of the transition area has decreased due to an increase in the area of the buffer zone, but the appropriate zonal structure of the Tadami BR has been maintained. That is to say, as shown in (1) of 9. Supporting Documents, the Tadami BR has a zonal structure consisting of the core area (3,557 ha) surrounded by the buffer zone (51,434 ha), and the transition area (23,023 ha) adjacent to the outside of the buffer zone, where village- vicinity mountains, cultivated land, residential areas and rivers are concentrated. The zonation in the Tadami BR is considered appropriate to serve the three functions of the biosphere reserve.

6. 6. “Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve”.

The Tadami Biosphere Reserve Governance Board, which is composed of bodies and organisations related to the Tadami BR, has formulated the “Tadami Biosphere Reserve Management Plan,” which sets forth the basic policies for the management of the Tadami BR. Based on this plan, the members of the Governance Board have planned and implemented projects related to the functions of the BR to the extent possible under their respective conditions (organisational structure, number of personnel, finances, etc.).

7. Mechanisms for implementation:

a) Mechanisms to manage human use and activities

The whole area of the core area and buffer zone of the Tadami BR is designated as the Conservation and Utilisation Zone of the Oku-Aizu Forest Ecosystem Reserve and as the Aizu-Sanchi Green Corridor based on the Act Concerning Utilization of National Forest Land, and as the Special Protection Zone, the Class I, II and III Special Zones of the Echigosanzan-Tadami Quasi-national Park based on the Natural Park Act. The use and activities by humans in the area are all regulated and managed appropriately by these relevant legal systems. The “Ordinance to Protect Wild Fauna and Flora in Tadami Town” is applied to the transition area, and sustainable development and industrial activities are recommended based on the ordinance.

b) Management policy or plan

The management and operation policies for the Tadami BR are specified in the “Tadami Biosphere Reserve Management Plan” formulated in 2015 by the Tadami Biosphere Reserve Governance Board, which is composed of relevant bodies and organisations. The plan underwent a mid-term review in 2019. The major change as a result of the review is the measures to minimise impacts of the opening of National Route 289, Hachijuri Mountain Road.

Furthermore, each member of the Governance Board plans projects related to the three functions of the BR based on this management plan. Tadami Town has drawn up the “Action Plan for the Promotion of Tadami Biosphere Reserve,” and is working to put it into a concrete shape.

c) Authority or mechanism to implement this policy or plan

The Tadami Biosphere Reserve Governance Board has its secretariat, which is responsible for liaison and coordination to implement the “Tadami Biosphere Reserve Management Plan,” at the Tadami Town Office UNESCO Biosphere Reserve Promotion Section. In addition, the Tadami Town Office, which is the main applicant for the registration of the Tadami BR, plays a central role in promoting the management plan. Within the Tadami Town Office, the UNESCO Biosphere Reserve Promotion Section and the Tadami Beech Center are responsible for the BR promotion. Their main duties include planning and implementation of projects based on the three functions of the BR, liaison and coordination with other departments of the Town Office, management and operation of museum facilities (Tadami Beech and River Museum, and Tagokura Heritage Center), and external support for the secretariat of the Tadami Biosphere Reserve Governance Board, the secretariat of the Tadami Biosphere Reserve Contributing Board and inspections and training related to the Tadami BR.

d) Programmes for research, monitoring, education and training

- The Minami-Aizu branch office of Aizu District Forest Office, the Kanto Regional Forest Office of the Forestry Agency has been conducting research on the habitat and breeding situations of rare raptors in order to conserve their habitat environment in the national forest projects in the Tadami BR.
- Tadami Beech Center has been conducting various types of monitoring for the protection and conservation of the natural environment and wildlife in the Tadami BR.
- Tadami Town established “‘The Capital of Mother Nature’: An academic investigation research subsidy project” in 2012, and since then, has been conducting various types of research on the natural environment, biodiversity, folklore and culture in the Tadami region by researchers and research groups.
- Tadami Town has been conducting research on unexplained natural environment and biodiversity in the Tadami BR (basic research on natural environment).
- Tadami Town and the Education Board of Tadami Town have been conducting research on the history, folklore and culture in the Tadami BR (basic research on social culture).
- The Tadami Beech Center has been supporting academic investigation research in the town by universities and research institutes through “‘The Capital of Mother Nature’: An academic investigation research subsidy project,” and the basic research on natural environment and social culture, and also strengthening cooperation with such universities and research institutes to make Tadami Town a hub of academic investigation and research.
- Tadami Town has been conducting comprehensive policy-based research to foster sustainable industrial activities utilising the local environment and resources.
- The Fukushima Prefectural Minami-Aizu Construction Office and Electric Power Development Co., Ltd. have been conducting ecosystem monitoring in development activities related to the projects in order to ensure appropriate conservation of the ecosystems in the planning, and during and after the implementation of projects.
- All elementary and junior high schools (four schools) in Tadami Town are members of the “UNESCO ASPnet, and ESD has been promoted with “Tadami Study,” which is to learn about the traditions and local knowledge of the Tadami region, at its core. The Tadami Beech Center and the Education Board of Tadami Town have been supporting school education through their professional staff and the museum facilities they manage and operate (Tadami Beech and River Museum, Togakura Heritage Center, and Tadami Museum of Folklore and History).
- Electric Power Development Co., Ltd. has been providing new employees of J-POWER Group with training in which they are encouraged to think about “how the hydroelectric power generation, natural environment conservation and regional coexistence should be” through lectures by the Tadami Town Office staff or the Tadami Beech Center staff on their approaches to the town development and UNESCO Biosphere Reserve, and field tours of beech forests.
- The Western Minami-Aizu Non-contribution Fishery Cooperative has been conducting activities to encourage all students of Asahi Elementary School (a member of the UNESCO ASPnet) to think about the importance of protecting and conserving the river environment through the experience of releasing juvenile fish (mandatory release under fishery rights).

Does the biosphere reserve have cooperative activities with other biosphere reserves (exchanges of information and staff, joint programmes, etc.)?

At the national level:

The Tadami BR participates in the Japanese Biosphere Reserves Network (JBRN) to exchange information through various conferences, meetings, excursions among BRs in Japan and to cooperate with other BRs to promote BR activities. Furthermore, the Tadami BR acted as the secretariat of JBRN for two years from 2020 to 2022.

The Minakami BR and the Shiga-highland BR are located close to the Tadami BR. The district head liaison

councils visited the Minakami BR and the official nature guides visited the Shiga-highland BR for training, and they engaged in the exchange of staff. In addition, the Tadami Beech Center invited researchers involved in the BRs (Aya BR and Minami-alps BR) in Japan and members of the Japanese Coordinating Committee for MAB, and held lectures to exchange information.

At the regional level:

In 2018, we invited researchers from the Shinan Dadohae Biosphere Reserve in the neighbouring East Asian country of Republic of Korea, and held lectures to interact with them. In addition, we also invited BR officials from Sarawak, Malaysia in Southeast Asia.

Through twinning and/or transboundary biosphere reserves:

Currently, there is no twinning programme with other BRs, but it may be considered in the future. We planned to participate in the General Conference of EABRN, held in Mongolia, but could not do it due to COVID-19. Since the Tadami BR is located in Japan, an island country, it is basically difficult to form a transboundary biosphere reserve.

Within the World Network:

In 2016, the Tadami BR made a presentation titled “Protecting and harnessing the lifestyles, culture and nature of snow country: Tadami Biosphere Reserve” (presented by Mr. Shinsuke Nakamura, who represented JBRN and was a member of the secretariat of the Mount Hakusan BR at that time, on behalf of the Tadami BR) at the 14th World Congress of Biosphere Reserves held in Lima.

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat:

In the last ten years, there have been no decisive obstacles to the promotion of the BR. However, COVID-19 hindered communication and caused delays in the promotion of the Tadami BR in mountainous areas such as Tadami BR where direct conversation (face-to-face exchange of opinions) is considered to be important. Electronic communication methods through personal computers, televisions, etc. had not been put in place when COVID-19 began to affect our society, but they have been gradually put in place. However, in an ageing local community, it was difficult to make full use of such methods, and we had to be keenly aware that direct communication was still essential. The same applies to the outside collaborators.

Although this was not an obvious obstacle, there was no legal system to protect and conserve the biodiversity and habitats of organisms in the transition area of the Tadami BR. However, the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” enacted in 2018 has strengthened the conservation function in the transition area. For example, the spraying of herbicides on the roadside of the arterial road was carried out on a trial basis from the perspective of labour and cost savings, and was subsequently discontinued due to opposing opinions from the local residents. What supported their opposing opinions was the “Ordinance to Protect Wild Fauna and Flora in Tadami Town.” On the other hand, some people were skeptical about this ordinance. What was behind this was their concern that in rapidly depopulated and ageing local communities where the survival of the communities was threatened, even development activities to solve such issues might be delayed or hindered in order to conserve the natural environment. Sharing knowledge and experiences on how to achieve regional economic development and increase in well-being without threatening the protection and conservation of the biodiversity is an extremely important issue not only in the core area and buffer zone, but also in the transition area.

Main objectives of the Biosphere Reserve:

Describe the main objectives of the biosphere reserve integrating the three functions and the sustainable development objectives for the coming years.

The local communities in the Tadami region have long been built upon their rich natural environment and diverse natural resources as a basis for their social and economic activities. While agriculture and forestry are the main business for livelihood, the Tadami region has inherited traditional lifestyles and culture at the bottom of it, which have continued since the Jomon era, i.e., hunting, gathering and fishing. This is known as a Beech Zone culture. However, in recent years, with the progress of depopulation and ageing of population, these kinds of socioeconomic systems have been strained and local communities have been declining. In response, Tadami Town developed the 6th Tadami Town development promotion plan to promote measures for regional independence and revitalisation through utilisation of the rich natural environment (snow and beech forests) and natural resources of this region in many different ways and inheritance and development of the regional traditions, culture and industries that have been nurtured based on the natural environment and resources. In order to further concretise and promote this plan, Tadami Town decided to utilise the framework of the Biosphere Reserve of the UNESCO MAB Programme because the natural environment and the local communities in Tadami region embodied the BR.

In the Tadami BR, nivation landforms formed by heavy snowfall and a vast primeval natural environment characterised by a vegetation mosaic have been protected and conserved under existing legal systems, such as the Oku-Aizu Forest Ecosystem Reserve based on the Act Concerning Utilization of National Forest Land and the Echigosanzan-Tadami Quasi-national Park based on the Natural Park Act; and as a result, the traditional lifestyles and culture of the people who rely on the natural environment have been maintained in a sustainable way. However, in the Tadami BR, on the other hand, the local communities are experiencing the decline of the primary industry (agriculture and forestry), which is a local industry, due to the progress of depopulation and ageing of population and outflow of young people to urban areas, which are common in mountainous areas in Japan, with changing modern social economy and values, and also experiencing the weakening of the inherited connection between local residents and the natural environment, due to significant changes in the local communities.

Therefore, primarily with the participation of the local residents, the Tadami BR aims to protect and conserve the natural environment and biodiversity based on scientific evidence obtained through investigation and research, while adapting the traditional lifestyles and culture that rely on the inherited natural environment to the modern socio-economy, industrialising them, and using them as teaching materials for education and human resource development in order to maintain and develop the connection between people and nature, that has been inherited in this region, and lead it to the regional revitalisation. Furthermore, it also aims to realise the principles and objectives of the BR of the UNESCO MAB Programme in the Tadami region. In addition, the achievement of these initiatives in the Tadami BR will also serve as a model that demonstrates the effectiveness of the BR for regional development of other mountainous areas with similar problems.

9. SUPPORTING DOCUMENTS

[List of the annexes submitted with periodic review report.]

(1) Updated location and zonation map with coordinates

[Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84). Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website...)]

As shown in the drawing provided in 2.2.2.

(2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the biosphere reserve should be provided, if available.]

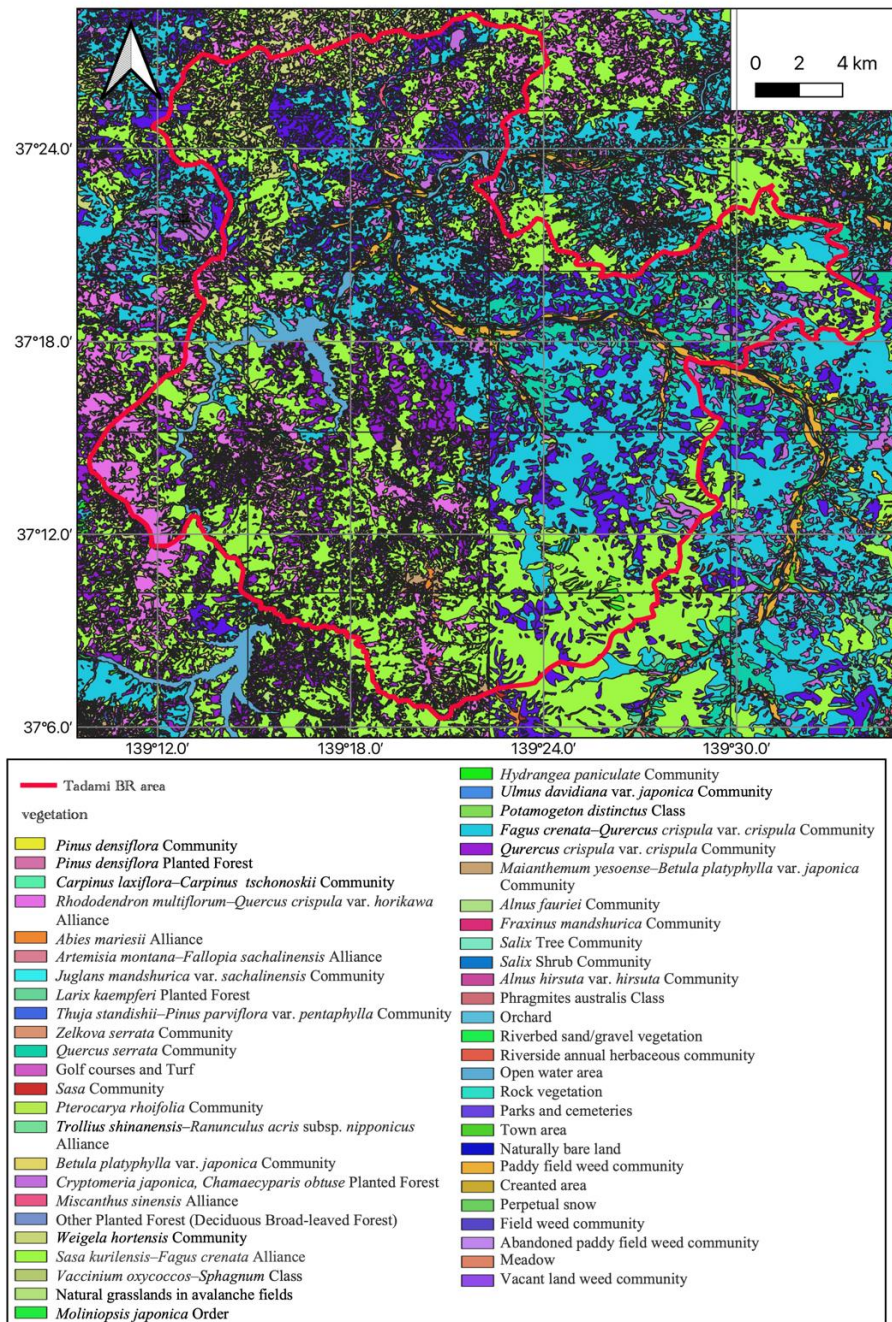


Figure 9-1 Vegetation map of Tadami BR

1/25,000 vegetation map “Mt. Meiko, Mt. Komagata, Mt. Mujinagamori, Mt. Sumondake, Tadami, Aizu-Yokota, Nojiri, Mt. Kemo, Lake Tagokura, Aizu-Kobayashi, Izumita, Mt. Mijogatake, Mt. Aizu-Asahidake, Mt. Jokago-Asahidake, Aizu-Yamaguchi, Lake Okutadami, Mt. Takayu, Uchikawa, Matsutohara” prepared and processed by the secretariat of the Tadami Biosphere Reserve Governance Board using GIS data (Biodiversity Center of Japan, the Ministry of the Environment) <http://gis.biodic.go.jp/webgis/index.html>

(3) Updated list of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[If applicable update the principal legal documents since the nomination of the biosphere reserve and provide a copy of these documents.]

- Land Improvement Act (Act No. 195 of 1949, Latest revision: 2022)
- Fishery Act (Act No. 267 of 1949, Latest revision: 2022)
- Act on Protection of Cultural Properties (Act No. 214 of 1950, Latest revision: 2022): Special natural monument designation (Japanese serow), Natural monument designation (Golden eagle (*A. chrysaetos japonica*) and Japanese dormouse (*Glirulus japonicus*))
- Act Concerning Utilization of National Forest Land (Act No. 246 of 1951, Latest revision: 2022)
- Forest Law (Act No. 249 of 1951, Latest revision: 2022)
- Agricultural Land Act (Act No. 229 of 1954, Latest revision: 2022)
- Natural Park Act (Act No. 161 of 1957, Latest revision: 2022)
- Act on Special Measures concerning Countermeasures for Heavy Snowfall Areas (Act No. 73 of 1962, Latest revision: 2022)
- River Act (Act No. 167 of 1964, Latest revision: 2022)
- Mountain Villages Development Act (Act No. 64 of 1965, Latest revision: 2021)
- Gravel Gathering Act (Act No. 74 of 1968, Latest revision: 2022)
- Law for the Conservation of Endangered Species of Wild Fauna and Flora (Act No. 75 of 1992, Latest revision: 2022)
- Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998, Latest revision: 2022)
- Act on Special Measures for Promotion for Independence for Underpopulated Areas (Act No. 15 of 2000, Latest revision: 2021)
- Wildlife Protection, Control, and Hunting Management Act (Act No. 88 of 2002, Latest revision: 2022)
- Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species (Act No. 78 of 2004, Latest revision: 2022)
- Act on Promotion of Organic Agriculture (Act No. 102 of 2006, Latest revision: 2015)
- Basic Act on Biodiversity (Act No. 58 of 2008)
- Forest Management Act (Act No. 35 of 2018, Latest revision: 2021)
- Act on Promotion of Business Activities to Reduce Environmental Impact for the Establishment of Food Systems in Harmony with the Environment (Act No. 37 of 2022)
- (Fukushima Prefecture) Regulation for the Protection of Wild Fauna and Flora of Fukushima Prefecture (Act No. 23 of 2005)
- (Fukushima Prefecture) Fukushima Prefecture Ordinance for the Protection of Cultural Properties (Act No. 43 of 1978)
- (Tadami Town) Tadami Town Ordinance for the Protection of Cultural Properties (Act No. 13 of 1985, Latest revision: 2007)

- (Tadami Town) Regulation for the protection and encouragement of natural scenery of Tadami Town (Act No. 25 of 1999)
- (Tadami Town) Regulation for the Protection of Wild Fauna and Flora of Tadami Town (Act No. 22 of 2018)

(4) Updated list of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the biosphere reserve. Provide a copy of these documents. It is recommended to produce an English, French or Spanish synthesis of its contents and a translation of its most relevant provisions.]

1. National Biodiversity Strategy 2012-2020 —Road map for the realisation of a rich natural harmonious society— (Cabinet decision in 2012)
2. Rules for Designating Protected Forests (Notification of Director-General of Forestry Agency “Restructure and Expansion of Protected Forest”, 1989) (The Forestry Agency)
3. Green Corridor Setting Rule (Notification of Director-General of Forest Agency “Setting of Green Corridors in National Forests”, 2000) (The Forestry Agency)
4. Oku-Aizu Forest Ecosystem Reserve Setting Policy (Kanto Regional Forest Office)
5. Forest Plan by Region for Aizu National Forest (Aizu Forest Planning Area) (Kanto Regional Forest Office, Formulated in 2022)
6. 6th Regional Administration and Management Plan (Aizu Forest Planning Area) (Kanto Regional Forest Office, Formulated in 2022)
7. 6th National Forest Operation Plan (Aizu Forest Planning Area) (Kanto Regional Forest Office, Formulated in 2022)
8. Echigosanzan-Tadami Quasi-national Park, Park Zone and Plan (the Ministry of the Environment, Formulated in 2021)
9. Echigosanzan-Tadami Quasi-national Park (Fukushima Prefecture area) Management and Operation Plan (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2022)
10. Fukushima Biodiversity Promotion Plan [3rd] (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2023)
11. Tadami River Area River Improvement Plan (Fukushima, Niigata and Gumma Prefectures, Formulated in 2009; first revision in 2015; second revision in 2018)
12. 13th Project Plan for Protection and Management of Bird and Animal Damage (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2022)
13. Fukushima Red List [2022 edition] (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2023)
14. Fukushima Blue List [2022 edition] (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2023)
15. Fukushima Prefecture Basic Policy on Countermeasures Against Alien Species (Nature Conservation Division, Living Environment Department, Fukushima Prefecture, Formulated in 2023)
16. Fukushima Prefecture Organic Agriculture Promotion Plan [3rd Period] (Environmental Preservation Agriculture Division, Agriculture, Forestry and Fishery Department, Fukushima Prefecture, Formulated in 2023)
17. Aizu Regional Forest Plan (Forestry Planning Division, Agriculture, Forestry and Fishery Department, Fukushima Prefecture, Developed in 2022)
18. The 7th Tadami Town development promotion plan (Tadami Town, Formulated in 2016)
19. Tadami Town Forest Improvement Plan (Tadami Town, Developed in 2022)

20. Basic Policy for the Protection of Wild Fauna and Flora in the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” (Tadami Town, Formulated in 2020)
21. Protection Standards of the “Ordinance to Protect Wild Fauna and Flora in Tadami Town” (Tadami Town, Formulated in 2020)

(5) Updated species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

The following lists are attached.

- List of Plants in Tadami Town
- List of Mammals in Tadami Town
- List of Birds in Tadami Town
- List of Reptiles in Tadami Town
- List of Amphibians in Tadami Town
- List of Fishes in Tadami Town
- List of Insects in Tadami Town

(6) Updated list of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve.]

List of articles and publications of relevance to the Tadami BR published in the last ten years (Tadami BR List of Literature)

(7) Further supporting documents.

- Tadami Biosphere Reserve Management Plan (Tadami Biosphere Reserve Governance Board, Formulated in 2015, Revised in 2019)
Website (in Japanese) URL: <http://tadami-br.jp/BRmanagement2019.pdf>
- Action Plan for the Promotion of Tadami Biosphere Reserve (Formulated by Tadami Town in 2015, Revised in 2019)
Website (in Japanese) URL: <http://tadami-br.jp/2019Action-plan.pdf>

10. ADDRESSES

10.1 Contact address of the proposed biosphere reserve:

[Government agency, organization, or other entity (entities) to serve as the main contact to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name: Secretariat of Tadami Biosphere Reserve Governance Board
 Street or P.O. Box: 1299 Tanaka, Tadami
 City with postal code: Tadami-machi, Minami-Aizu-gun, Fukushima 968-0421
 Country: Japan
 Telephone: +81-241-72-8466
 E-mail: tadamibr@town.tadami.lg.jp
 Web site: http://Tadami BR.jp/

10.2 Administering entity of the core area(s):

Name: Forest Planning Division, Kanto Regional Forest Office, Forestry Agency
 Street or P.O. Box: 4-16-25 Iwagami-machi
 City with postal code: Maebashi-shi, Gumma 371-8508
 Country: Japan
 Telephone: +81-27-210-1265
 E-mail: kanto_keikaku@rinya.maff.go.jp
 Web site: http://www.rinya.maff.go.jp/kanto/

Name: Nature Conservation Division, Living Environment Department, Fukushima Prefecture
 Street or P.O. Box: 2-16 Sugitsuma-cho
 City with postal code: Fukushima-shi, Fukushima 960-8670
 Country: Japan
 Telephone: +81-24-521-725
 E-mail: shizen@pref.fukushima.lg.jp
 Web site: http://wwwcms.pref.fukushima.jp/

10.3 Administering entity of the buffer zone(s):

Name: Forest Planning Division, Kanto Regional Forest Office, Forestry Agency
 Street or P.O. Box: 4-16-25 Iwagami-machi
 City with postal code: Maebashi-shi, Gumma 371-8508
 Country: Japan
 Telephone: +81-27-210-1265
 E-mail: kanto_keikaku@rinya.maff.go.jp
 Web site: http://www.rinya.maff.go.jp/kanto/

Name: Nature Conservation Division, Living Environment Department, Fukushima Prefecture

Street or P.O. Box: 2-16 Sugitsuma-cho
 City with postal code: Fukushima-shi, Fukushima 960-8670
 Country: Japan
 Telephone: +81-24-521-725
 E-mail: shizen@pref.fukushima.lg.jp
 Web site: http://wwwcms.pref.fukushima.jp/

10.4 Administering entity of the transition area(s):

Name: Forest Planning Division, Kanto Regional Forest Office, Forestry Agency
 Street or P.O. Box: 4-16-25 Iwagami-machi
 City with postal code: Maebashi-shi, Gumma 371-8508
 Country: Japan
 Telephone: +81-27-210-1265
 E-mail: kanto_keikaku@rinya.maff.go.jp
 Web site: http://www.rinya.maff.go.jp/kanto/

Name: Nature Conservation Division, Living Environment Department, Fukushima Prefecture
 Street or P.O. Box: 2-16 Sugitsuma-cho
 City with postal code: Fukushima-shi, Fukushima 960-8670
 Country: Japan
 Telephone: +81-24-521-725
 E-mail: shizen@pref.fukushima.lg.jp
 Web site: http://wwwcms.pref.fukushima.jp/

Name: UNESCO Biosphere Reserve Promotion Section, Exchange Promotion Division, Tadami Town Office
 Street or P.O. Box: 2590 Machishita, Tadami
 City with postal code: Tadami-machi, Minami-Aizu-gun, Fukushima 968-0421
 Country: Japan
 Telephone: +81-241-82-5963
 E-mail: tadamibr@town.tadami.lg.jp
 Web site: http://wwwcms.pref.fukushima.jp/

Name: Tadami Beech Center, Tadami Town Office
 Street or P.O. Box: 2590 Machishita, Tadami
 City with postal code: Tadami-machi, Minami-Aizu-gun, Fukushima 968-0421
 Country: Japan
 Telephone: +81-241-72-8355

E-mail: info-buna@amail.plala.or.jp

Web site: <http://www.tadami-buna.jp/>

Annex I to the Biosphere Reserve Periodic Review, January 2013
MABnet Directory of Biosphere Reserves

Administrative details

Country: Japan

Name of BR: Tadami Biosphere Reserve: Tadami BR

Year designated: 2014

Administrative authorities: (7.6)

<Core area>

The Kanto Regional Forest Office of the Forestry Agency, and Fukushima Prefecture

<Buffer zone>

The Kanto Regional Forest Office of the Forestry Agency, the Tohoku Regional Environment Office of the Ministry of the Environment, Fukushima Prefecture, and Tadami Town

<Transition area>

The Kanto Regional Forest Office of the Forestry Agency, the Tohoku Regional Environment Office of the Ministry of the Environment, Fukushima Prefecture, and Tadami Town

Name Contact: (10.1) Secretariat of the Tadami Biosphere Reserve Governance Board

Contact address: (Including phone number, postal and email addresses) (10.1)

Address and postal code: 1299 Tanaka, Tadami, Tadami-machi, Minami-Aizu-gun, Fukushima 968-0421

Telephone: +81-241-72-8466

Email: tadamibr@town.tadami.lg.jp

Related links: (web sites)

<http://Tadami BR.jp/>

Social networks: (6.5.4)

Currently it is not registered in any social media (Facebook, Twitter, etc.).

Description

General description:

In Tadami BR, mountains occupy most of the earth's surface area except for the basins of the Tadami River and its tributary, the Ina River. Especially in the southern and western areas, steep massifs - Mt. Aizu-Asahidake (1,624 m) and Mt. Asakusadake (1,586 m) – both with altitudes above 1,000 m are found. In the mountains of the southern part, ridges extend in a north-south direction, limiting the flow direction of the Tadami River, Ina River and their major tributaries. Whereas in the northern area of the Ina River basin, gently-sloping mountain ranges are found around Mt. Asakusadake with a constant altitude of 800 to 1,000 m. In those mountains, slopes are shaved off by avalanches, bedrocks are exposed, and steep and complicated “nivation landforms” are formed, due to the geological characteristics of heavy snowfall, the Tadami area has one of the heaviest snowfalls in Japan (annual average snow coverage in winter is 2.5 m), and the green tuff bedrock with a comparatively fragile nature. In this complicated

topography, a “mosaic vegetation” where plant communities grow by adapting to each habitat environment is formed. The minimum altitude is 350 m at the Tadami River near the border of Tadami Town and Kaneyama-town, and the maximum altitude is 1,819.9 m at Mt. Maruyamadake located at the border of Tadami Town and Hinoemata-village. The number of residents living in the area along the Tadami River and Ina River, which is the transition area is 3,750 (As of April, 2023).

Major ecosystem type:

Cool-temperate deciduous broad-leaved forests (Nivation landform and mosaic vegetation)

Major habitats & land cover types:

Cool-temperate deciduous broad-leaved forests (Nivation landform and mosaic vegetation)

Bioclimatic zone:

Entire proposed site belongs to the humid zone.

Location (latitude & longitude):

Key points	Latitude	Longitude
Central point	37°17'8.6”	139°20'45.3”
Northernmost point	37°28'11.5”	139 °21'45.0”
Southernmost point	37°06'17.0”	139°20'46.6”
Westernmost point	37°14'13.1”	139°09'52.3”
Easternmost extent	37°19'22.8”	139°34'30.3”

Total Area (ha):

78,032 ha (only land)

Core area(s):

3,557 ha (only land)

Buffer zone(s):

51,434 ha (only land)

Transition area(s):

23,023 ha (only land)

Different existing zonation:

- Protection Zone and Conservation and Utilisation Zone of “Oku-Aizu Forest Ecosystem Reserve” based on the Act Concerning Utilization of National Forest Land

- Special Protection Zone, Class I Special Zone, Class II Special Zone and Class III Special Zone of “Echigosanzan-Tadami Quasi-national Park” based on the Natural Park Act
- Protected Forests “Aizu Mountains Green Corridor” based on the Act Concerning Utilization of National Forest Land

Altitudinal range (metres above sea level):

350 to 1819 m

Zonation map(s) (refer to section 2.2.2):

Main objectives of the biosphere reserve

Brief description

In the Tadami area, the local community has developed historically by taking advantage of the rich natural environment and utilizing a variety of natural sources through hunting and collecting. However, in recent years, with depopulation and an aging population, these kinds of socioeconomics systems are now distorted and local communities have fallen into decline. Therefore, regional independence and activation are promoted by variedly utilizing the rich natural environment (snow, beech forest) and natural resources of this area, by inheriting the regional traditions, cultures and industries grown out of and developed from such natural resources.

Research

Brief description

The Tadami Town Office, the Tadami Beech Center and the Education Board of Tadami Town conduct basic investigation research on industrial development utilising the natural environment, biodiversity, history, culture, folklore and local resources in the Tadami BR area. Furthermore, Tadami Town has established “‘The Capital of Mother Nature’: An academic investigation research subsidy project” to provide subsidies to universities and research institutes that conduct investigation research on the natural environment, biodiversity, history, lifestyles and culture in the Tadami region. The Tadami Beech Center, in cooperation with such organisations, serves as a hub for academic investigation research in Tadami Town.

Monitoring

Brief description

The Tadami Beech Center conducts monitoring studies on natural beech forests, rare raptors (Golden eagle: *A. chrysaetos japonica*, Mountain Hawk-Eagle: *N. nipalensis*, etc.), and Japanese black bear (*U. thibetanus japonicus*).

The Minami-Aizu branch office of Aizu District Forest Office, the Kanto Regional Forest Office of the Forestry Agency conducts investigations into the habitat situation and nesting places of rare raptors, such as Golden eagle (*A. chrysaetos japonica*) and Mountain Hawk-Eagle (*N. nipalensis*) to conserve the habitat environment of rare raptors in the national forest projects.

Specific variables (fill in the table below and tick the relevant parameters)

Abiotic		Biodiversity	
Abiotic factors	○	Afforestation/Reforestation	
Acidic deposition/Atmospheric factors		Algae	
Air quality		Alien and/or invasive species	○
Air temperature	○	Amphibians	○
Climate, climatology	○	Arid and semi-arid systems	
Contaminants		Autoecology	○
Drought		Beach/soft bottom systems	
Erosion	○	Benthos	○
Geology	○	Biodiversity aspects	○
Geomorphology	○	Biogeography	○
Geophysics		Biology	○
Glaciology		Biotechnology	
Global change		Birds	○
Groundwater		Boreal forest systems	○
Habitat issues	○	Breeding	○
Heavy metals		Coastal/marine systems	
Hydrology	○	Community studies	○
Indicators	○	Conservation	○
Meteorology	○	Coral reefs	
Modeling		Degraded areas	
Monitoring/methodologies		Desertification	
Nutrients	○	Dune systems	
Physical oceanography		Ecology	○
Pollution, pollutants		Ecosystem assessment	○
Siltation/sedimentation	○	Ecosystem functioning/structure	○
Soil	○	Ecosystem services	○
Speleology		Ecotones	○
Topography	○	Endemic species	○
Toxicology		Ethology	○
UV radiation		Evapotranspiration	○
		Evolutionary studies/Palaeoecology	○
		Fauna	○
		Fires/fire ecology	
		Fishes	○
		Flora	○
		Forest systems	○
		Freshwater systems	○
		Fungi	○
		Genetic resources	○
		Genetically modified organisms	
		Home gardens	○
		Indicators	○
		Invertebrates	○
		Island systems/studies	
		Lagoon systems	
		Lichens	○
		Mammals	○

		Manrove systems	
		Mediterranean type systems	
		Microorganisms	<input type="checkbox"/>
		Migrating populations	<input type="checkbox"/>
		Modeling	<input type="checkbox"/>
		Monitoring/methodologies	<input type="checkbox"/>
		Mountain and highland systems	<input type="checkbox"/>
		Natural and other resources	<input type="checkbox"/>
		Natural medicinal products	<input type="checkbox"/>
		Perturbations and resilience	
		Pests/Diseases	<input type="checkbox"/>
		Phenology	<input type="checkbox"/>
		Phytosociology/Succession	<input type="checkbox"/>
		Plankton	<input type="checkbox"/>
		Plants	<input type="checkbox"/>
		Polar systems	
		Pollination	<input type="checkbox"/>
		Population genetics/dynamics	<input type="checkbox"/>
		Productivity	<input type="checkbox"/>
		Rare/Endangered species	<input type="checkbox"/>
		Reptiles	<input type="checkbox"/>
		Restoration/Rehabilitation	<input type="checkbox"/>
		Species (re) introduction	
		Species inventorying	<input type="checkbox"/>
		Sub-tropical and temperate rainforest	
		Taxonomy	<input type="checkbox"/>
		Temperate forest systems	<input type="checkbox"/>
		Temperate grassland systems	<input type="checkbox"/>
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	<input type="checkbox"/>
		Volcanic/Geothermal systems	
		Wetland systems	<input type="checkbox"/>
		Wildlife	<input type="checkbox"/>

Socio-economic		Integrated monitoring	
Agriculture/Other production systems	<input type="checkbox"/>	Biogeochemical studies	<input type="checkbox"/>
Agroforestry	<input type="checkbox"/>	Carrying capacity	<input type="checkbox"/>
Anthropological studies	<input type="checkbox"/>	Climate change	<input type="checkbox"/>
Aquaculture	<input type="checkbox"/>	Conflict analysis/resolution	<input type="checkbox"/>
Archaeology	<input type="checkbox"/>	Ecosystem approach	<input type="checkbox"/>
Bioprospecting	<input type="checkbox"/>	Education and public awareness	<input type="checkbox"/>
Capacity building	<input type="checkbox"/>	Environmental changes	<input type="checkbox"/>
Cottage (home-based) industry	<input type="checkbox"/>	Geographic Information System (GIS)	<input type="checkbox"/>
Cultural aspects	<input type="checkbox"/>	Impact and risk studies	<input type="checkbox"/>
Demography	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Economic studies	<input type="checkbox"/>	Indicators of environmental quality	<input type="checkbox"/>
Economically important species	<input type="checkbox"/>	Infrastructure development	<input type="checkbox"/>
Energy production systems	<input type="checkbox"/>	Institutional and legal aspects	<input type="checkbox"/>
Ethnology/traditional practices/knowledge	<input type="checkbox"/>	Integrated studies	<input type="checkbox"/>
Firewood cutting	<input type="checkbox"/>	Interdisciplinary studies	<input type="checkbox"/>
Fishery	<input type="checkbox"/>	Land tenure	<input type="checkbox"/>
Forestry	<input type="checkbox"/>	Land use/Land cover	<input type="checkbox"/>
Human health	<input type="checkbox"/>	Landscape inventorying/monitoring	<input type="checkbox"/>
Human migration	<input type="checkbox"/>	Management issues	<input type="checkbox"/>
Hunting	<input type="checkbox"/>	Mapping	<input type="checkbox"/>
Indicators	<input type="checkbox"/>	Modelling	<input type="checkbox"/>
Indicators of sustainability	<input type="checkbox"/>	Monitoring/methodologies	<input type="checkbox"/>
Indigenous people's issues		Planning and zoning measures	<input type="checkbox"/>
Industry	<input type="checkbox"/>	Policy issues	<input type="checkbox"/>
Livelihood measures	<input type="checkbox"/>	Remote sensing	<input type="checkbox"/>
Livestock and related impacts	<input type="checkbox"/>	Rural systems	<input type="checkbox"/>
Local participation	<input type="checkbox"/>	Sustainable development/use	<input type="checkbox"/>
Micro-credits	<input type="checkbox"/>	Transboundary issues/measures	
Mining		Urban systems	
Modelling		Watershed studies/monitoring	<input type="checkbox"/>
Monitoring/methodologies	<input type="checkbox"/>		
Natural hazards	<input type="checkbox"/>		
Non-timber forest products	<input type="checkbox"/>		
Pastoralism			
People-Nature relations	<input type="checkbox"/>		
Poverty			
Quality economies/marketing	<input type="checkbox"/>		
Recreation	<input type="checkbox"/>		
Resource use	<input type="checkbox"/>		
Role of women	<input type="checkbox"/>		
Sacred sites			
Small business initiatives	<input type="checkbox"/>		
Social/Socio-economic aspects	<input type="checkbox"/>		
Stakeholders' interests	<input type="checkbox"/>		
Tourism	<input type="checkbox"/>		
Transports	<input type="checkbox"/>		

Annex II to the Biosphere Reserve Periodic Review, January 2013
Promotion and Communication Materials
for the biosphere reserve

Provide some promotional material regarding the site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.

In addition, return a signed copy of the following Agreements on Non-Exclusive Rights for photo(s) and video(s).

UNESCO Photo Library
Bureau of Public Information

Agreement on Non-Exclusive Right to Use

Reference:

1. a) I, the undersigned at the end of this document and the copyright holder of the above-mentioned photo(s), hereby grant UNESCO the non-exclusive rights to use, publish, copy, disseminate and transmit the whole or any part of the said photo(s) (including digital versions) to the public, free of charge, in any form and in any media. Furthermore, I grant these rights to third parties based on the rights granted to UNESCO in this agreement.

b) These rights are granted to UNESCO throughout the world for the term of the copyright.

c) The name of the photographer shall always be cited together with the name of UNESCO whenever his/her work is used regardless of the form.

2. I hereby guarantee

a) that I am the sole copyright holder of the photo(s) and the holder of the rights conferred by this agreement; that I also hold other rights that have been recognised to belong to me by national laws and relevant international treaties relating to copyright; and that I fully own the right to sign this agreement, and

b) that the photo(s) does not violate or infringe any existing copyright or license in any way, and does not contain any obscenity, defamation or slander.

Name and address: yosuke NAKANO, 1299 tanaka, tadami, tadami town, minamiaizugun, Fukushima, 968-0421

Signature: *yosuke nakano*

Date: August 29, 2024

(Two copies of this agreement shall be signed and sent to the UNESCO Secretariat, and the original shall be signed and kept.)

(Addressee) 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687

Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

UNESCO Photo Library
Bureau of Public Information

Agreement on Non-Exclusive Right to Use

Reference:

1. a) I, the undersigned at the end of this document and the copyright holder of the above-mentioned video(s), hereby grant UNESCO the non-exclusive rights to use, publish, copy, disseminate and transmit the whole or any part of the said video(s) (including digital versions) to the public, free of charge, in any form and in any media. Furthermore, I grant these rights to third parties based on the rights granted to UNESCO in this agreement.

b) These rights are granted to UNESCO throughout the world for the term of the copyright.

c) The name of the creator/copyright holder shall always be cited together with the name of UNESCO whenever his/her work is used regardless of the form.

2. I hereby guarantee

a) that I am the sole copyright holder of the video(s) and the holder of the rights conferred by this agreement; that I also hold other rights that have been recognised to belong to me by national laws and relevant international treaties relating to copyright; and that I fully own the right to sign this agreement, and

b) that the video(s) does not violate or infringe any existing copyright or license in any way, and does not contain any obscenity, defamation or slander.

Name and address yosuke NAKANO, 1299 tanaka, tadami, tadami town, minamiaizugun, Fukushima, 968-0421

Signature: *yosuke nakano*

Date: August 29, 2024

(Two copies of this agreement shall be signed and sent to the UNESCO Secretariat, and the original shall be signed and kept.)

(Addressee) 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687

Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

<p style="text-align: center;">Annex III to the Biosphere Reserve Periodic Review, January 2013 Articles of Association of the World Network of Biosphere Reserves</p>
--

Please refer to the following website (pages 24-27).

http://www.mext.go.jp/component/a_menu/other/micro_detail/__icsFiles/afieldfile/2013/11/28/1341691_04.pdf

(Link to the website of the Ministry of Education, Culture, Sports, Science and Technology)