State of Conservation Report of Amami-Oshima Island, Tokunoshima Island, Northern part of Okinawa Island, and Iriomote Island (Japan) (N1574)

in Response to the World Heritage Committee Decision 44 COM 8B.5

Government of Japan

November 2022

Contents

Annexes

1. Executive summary of the report

The Government of Japan established task forces for each of the four requests pursuant to Decision 44 COM 8B.5 adopted by the 44th session of the World Heritage Committee and examined its responses to these requests.

- For tourism management, the existing basic visitor management plan is being revised into the Iriomote Island Tourism Management Plan, an integrated plan of various concepts, plans, and systems related to tourism on Iriomote Island, based on the evaluation of the possible impact of tourism use. Under this plan, the tourist visitation level will be managed and other measures will be implemented, including legally binding entry regulations within the property and reducing visitor concentration during certain periods.
- For traffic management to reduce road fatalities, the current status on the four islands containing the property was compiled, including the roadkill incidents of threatened species, implementation of countermeasures, and their effectiveness. The result indicated that continued enhancement of roadkill prevention measures for threatened species is necessary on all four islands. In the locations where prioritized countermeasures were deemed necessary, traffic management measures were enhanced, or methods of enhancement were examined. Ongoing monitoring of roadkills and examinations of the effectiveness of countermeasures will continue so as to adopt the optimal measures for each location. In addition, relevant organizations will work together to promote the development of more effective countermeasures based on the examination of roadkill reduction measures and the mechanism of roadkill occurrence.
- For river restoration, a comprehensive river restoration strategy, presenting the basic approach to and process of river restoration on the property, was developed. In line with this strategy, research on the impact of river structures on the property and analyses and examinations of causal relationships will commence.
- For forest management, actions concerning future logging operations in the buffer zones were examined and compiled through discussions with forestry operators, taking into account the status of various systems for logging operations on Amami-Oshima Island, Tokunoshima Island, and Northern part of Okinawa Island. Efforts with an enhanced consideration to the natural environment will be promoted, such as compliance with the forestry operation policy established for each region and regular information exchange and liaising between forestry operators and relevant government agencies, in addition to compliance with regulations such as the Natural Parks Act. Furthermore, research will be conducted to investigate whether logging operations in the buffer zones have any impact on the Outstanding Universal Value (OUV).

There are no other conservation issues identified nor development projects which may impact on OUV of the property.

Public access to the state of conservation report is acceptable.

2. Response to the Decision of the World Heritage Committee

The Government of Japan has established task forces consisting of relevant government organizations and experts in different fields under the Regional Liaison Committee (which comprises the administrative organs of the property, including Ministry of the Environment, Forestry Agency, Agency for Cultural Affairs, Kagoshima Prefecture, Okinawa Prefecture, and 12 municipalities), in response to the four requests pursuant to Decision 44 COM 8B.5, adopted by the 44th session of the World Heritage Committee. Under this structure, Japan's responses to these requests have been examined taking into account the scientific advice provided by the Scientific Committee (Figure 1).

The following is a report on the progress regarding the results of the review of each request.

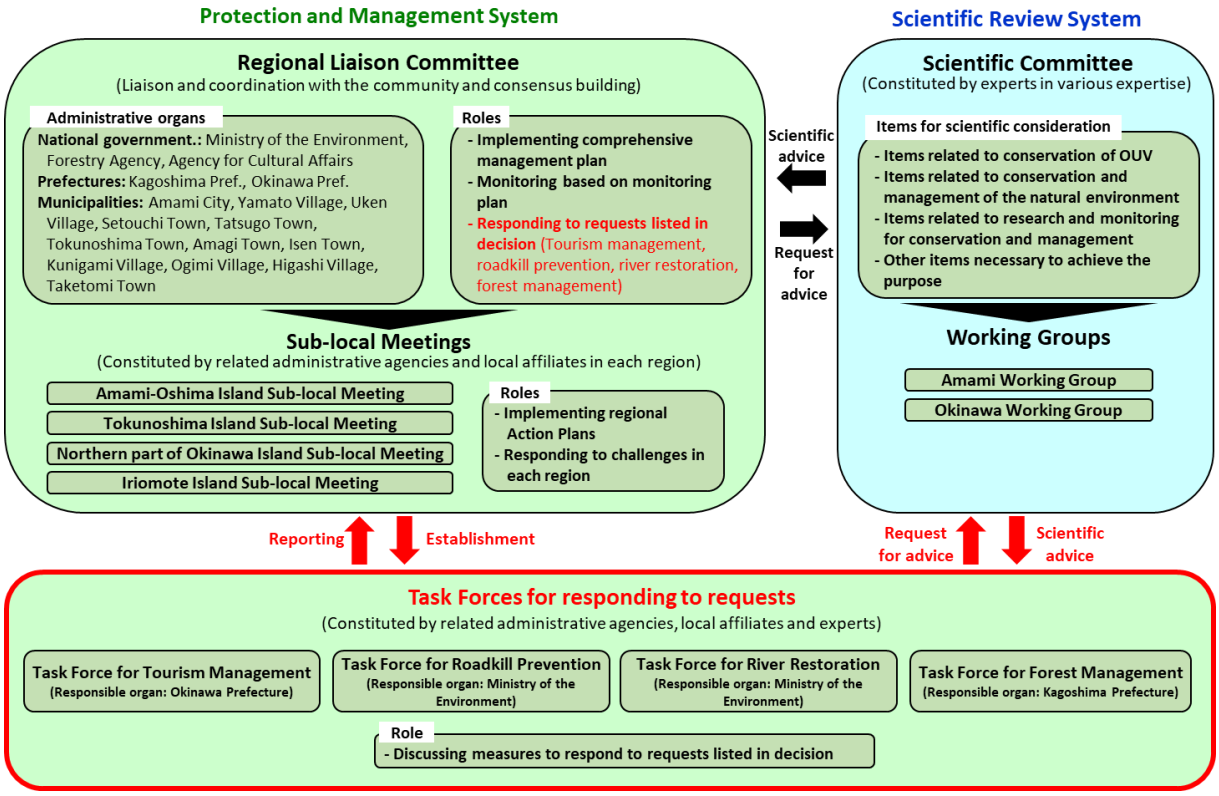

Figure 1: Comprehensive management system of the property

2.1 Tourism management

a) Capping or reducing levels of tourist visitation from current levels, especially on Iriomote Island, until a critical evaluation of tourism carrying capacity and impacts can be conducted and integrated into a revised tourism management plan.

2.1.1 Report on Iriomote Island

(1) The current status of tourism uses and tourism management on Iriomote Island

- On Iriomote Island, visitors to the island are managed based on the Basic Visitor Management Plan for a Sustainable Iriomote Island established in January 2020, and monitoring on the status of tourism uses and their environmental loads is conducted in cooperation with experts.
- The annual number of tourists visiting Iriomote Island averaged 330,000 for the ten years leading up to 2019 (excluding 2011 data, which was affected by the Great East Japan Earthquake). It peaked at 390,000 in 2015, and then showed a gradual downward trend. Since 2020, that number has fallen by 50% or more of the pre-2019 level due to the impact of movement restrictions in response to the COVID-19 pandemic. Accordingly, this report uses the number of tourists in 2019, the year immediately preceding the COVID-19 pandemic, as the current level.
- Tourism on Iriomote Island can be generally divided into the following two types: circular tours where tourists move around the island on large buses or motor-driven vessels; and nature experience-oriented tours where tourists enjoy canoeing, trekking and other nature-based activities. While the former often attracts group travelers, the latter is popular with individual travelers. The trend in recent years has been a decrease for group tours and an increase for individual travel. For both travel types, a small number of tourists stay overnight on Iriomote Island. According to a survey conducted from 2015 to 2016, the proportion of tourists staying overnight on Iriomote Island was 23%.
- The number of tourists who visited Iriomote Island in 2019 was 290,000. Of these, a cumulative total of approximately 70,000 people (24%) participated in canoeing, trekking and other eco tours led by tour guides to visit fields within the property. A cumulative total of approximately 150,000 people (52%) participated in sightseeing tours using motor-driven vessels on the Nakama and Urauchi rivers. In addition, tourists also used facilities and fields in the Surrounding Conservation Area and marine areas.
- The number of tourists visiting Iriomote Island fluctuates greatly from day to day. In 2019, it peaked at 1,543 people a day, averaged 862 people a day, with a standard deviation of 250 people a day, and trends indicate that tourism use is concentrated in certain periods.

(2) Evaluation of tourism carrying capacity and its impact

- Okinawa Prefecture has identified all the potential impacts (threats) of tourism within and outside the property on Iriomote Island, and for each threat, the prefecture evaluated the current risk level and its fluctuations based on the level of importance and tourism carrying capacity of the affected areas. The results of the evaluation are as follows.

  (i) With respect to nature experience-oriented tours in the property, the number of fields used and the number of people entering each field have been on the rise in recent years. For the most heavily used Hinai River, the number of people entering the field on a peak day far exceeded the river's tourism carrying capacity calculated from the spatial volume of the visited area. The current level of risk is therefore evaluated as high and on the rise with respect to the number of the fields used, the number of visitors entering each field, and the impact of visitor activities. On the other hand, with respect to circular tours using motor-driven vessels on the Nakama and Urauchi rivers, which are also in the property, the current level of risk is evaluated as low and the likelihood of future increase in the risk is also low, given that measures to reduce their impact have already been taken and the number of tourists using these services has been declining in recent years.

  (ii) As for the total number of tourists to Iriomote Island, including outside the property, the island's tourism carrying capacity has been examined from the viewpoint of its capacities of transport, waste and sewage treatment, clean water supply, and so on. The island's clean water supply capacity was identified as one of the factors in restricting the daily number of tourists visiting the island, given the situation where water supply capacity approaches its limit and there is concern that the lives of local residents could be temporarily affected by tourism during certain periods of concentrated tourism use. At the current tourist visitation level, the island's tourism carrying capacity calculated from its clean water supply capacity was exceeded on 24 days a year (approx. 7%). However, given that the actual water shortage was not severe and the actions taken so far have been limited to making requests to save water, the current level of risk is evaluated to be medium and there is no clear sign of it rising.

  (iii) On changes to the travel type of tourists, no direct causal relationship has been identified between the occurrence of roadkill involving Iriomote cats or other animals and an increase in traffic on the island as well as the diversification of tourists' behavior due to an increase in individual travelers. However, judging from the severity of fatal traffic accidents involving Iriomote cats or other animals, the current level of risk has been evaluated to be high and on the rise.

(3) Management methods of tourist visitation levels on Iriomote Island

- Tourist visitation levels are managed by the following methods in response to the risks and threats identified in the above evaluation.

  (i) To manage nature experience-oriented tours in the property, based on the Ecotourism Promotion Act of Japan, the Taketomi Town Iriomote Island Ecotourism Promotion Council has established appropriate management standards for the number of fields to be used, the number of people entering each field, and visitors' behaviors within the field. In fields where there is an especially strong concern over the impact of tourism, entry is restricted by establishing the maximum number of visitors per day below the current visitation level. With respect to other fields, ceilings are also set on the number of tourists per tour guide and total daily number of tourists per business operator. Specifically, in accordance with the Ecotourism Promotion Act, those who intend to enter the field must apply in advance to the Mayor of Taketomi Town, and only those who are approved are allowed to enter, within the maximum number of visitors. Those who fail to comply with this provision will be penalized. With regard to the limitation on the number of tourists per tour guide and business operator, compliance with management standards is required in the licensing system based on the Ordinance Concerning Tourism Guides in Taketomi Town. Administrative penalties shall be imposed on violators. By combining the provisions of the Ecotourism Promotion Act and this Ordinance, nature experience-oriented tours is regulated and legally bound. Additionally, the Iriomote Foundation, established mainly by local people, is expected to be commissioned by Taketomi Town to operate the entry regulation and guide licensing system.

  (ii) To manage the daily number of tourists visiting Iriomote Island, the island's tourism carrying capacity calculated from its clean water supply capacity (1,200 people/day)* is used as the management standard. To adhere to this standard, the daily number of tourists visiting the island is controlled at or below the current visitation level, and visitor concentration in certain periods is mitigated by encouraging individual travelers to visit the island during the off-season through the enhancement of information dissemination by measures such as an ethical tourism calendar that predicts congestion on Iriomote Island. The visiting periods of group tours are also coordinated in advance at liaison meetings with tourism-related businesses (airlines, shipping companies, travel agents) transporting tourists to Iriomote Island.

  ** If the proportion of tourists staying overnight on the island rises, the island's tourism carrying capacity calculated from its clean water supply capacity will fall. The tourism carrying capacity must therefore be reviewed according to the monitoring results of the overnight stay.*

  (iii) In response to the growing trend towards individual travel, for the time being, measures are being taken, such as installing devices in rental cars to alert against exceeding the statutory

speed limit, placing warning signs in areas where roadkills have been found, and enhancing public awareness activities. Going forward, we will analyze the relationship between tourists and traffic accidents involving Iriomote cats and so on. Based on the results of this analysis, more effective measures will be considered in national, prefectural, and other projects.

- In addition to the management methods described in (i) to (iii) above, administrative organs will accelerate efforts to introduce the followings as new mechanisms to nurture tourists' awareness about the environmental load of tourism and to encourage them to act responsibly.
  - Taketomi Town will establish a Taketomi Town Visitor Tax (provisional name) to equitably collect from tourists a fee for entering Iriomote Island. The tax collected will be used to pay for operating various systems for tourism management, monitoring activities and improving infrastructure to reduce the impact of tourism, and so on.
  - Okinawa Prefecture will introduce and utilize an Eco-certification System (provisional name), under which government agencies and others certify, award, and advertise tourism operators and local people who are operating ethical tours with smaller environmental loads and/or who conduct environmental conservation activities. The system will be used as an incentive to promote the reduction of tourism's environmental load. The prefectural government is going to consider toward the establishment of the system and preparation of a budget.

(4) Integration with and revision to the Iriomote Island Tourism Management Plan

- To systematically implement the tourism management methods presented in (3) above, based on the evaluation of the island's tourism carrying capacity and so on described in (2), Okinawa Prefecture is revising its Basic Visitor Management Plan for a Sustainable Iriomote Island established in January 2020, to create the Iriomote Island Tourism Management Plan as a comprehensive plan having various concepts, plans, and systems related to Iriomote Island tourism which have so far been discussed separately.
- In order to securely implement projects based on the plan and confirm outcome, the Iriomote Island Tourism Management Plan will grant the Iriomote Island Sub-local Meeting under the Regional Liaison Committee the function to review and update the plan based on continuous monitoring and objective evaluations.
- Revision to create the Iriomote Island Tourism Management Plan began in August 2021 with the establishment of a task force consisting of experts, relevant local groups and businesses, and administrative organs. The task force examined the plan and a draft plan was approved by the Iriomote Island Sub-local Meeting in July 2022. Presently, hearings of opinions and adjustments to details are taking place with respect to the draft plan. The Iriomote Island Tourism Management

Plan is scheduled to be finalized at the Iriomote Island Sub-local Meeting in February 2023. An outline of the draft Iriomote Island Tourism Management Plan as of July 2022 is attached to this report. (Annex a-1)

2.1.2 Report on other three regions

- With respect to Amami-Oshima Island, Tokunoshima Island, and Northern part of Okinawa Island, we have not seen any rapid increase in tourists at present and have not confirmed any problem that requires urgent actions, partly due to the impact of the movement restrictions in response to COVID-19. We will continue to closely monitor the actual status of tourism uses both within and outside the property.
- Further efforts will be made based on the Master Plan of the Amami Island Group Sustainable Tourism and the Master Plan of the Northern Part of Okinawa Island Sustainable Tourism. Confirmation and coordination is to be carried out in the relevant Sub-local Meetings and expert committees to ensure that the plan is appropriately operated, reviewed, and updated in accordance with the actual situation in each region.
- An overview of tourism management on Amami-Oshima Island, Tokunoshima Island, and Northern part of Okinawa Island is attached to this report. (Annex a-2)

2.2 Traffic management to reduce road fatalities

b) Urgently reviewing the effectiveness and strengthening if necessary the traffic management measures designed to reduce road fatalities of endangered species (including but not limited to Amami Rabbit, Iriomote Cat, and Okinawa Rail)

2.2.1 Status of roadkills and their impact on the species survival and the ecosystem functions

- Roadkill incidents of threatened species, the causes, and the impact on their populations on the four islands have been reviewed based on the information obtained to date. For all species, roadkill incidents have been on the rise or have remained at high levels over a long time. The potential causes of this situation are changes in tourism dynamics and a recovery in, and greater distribution of, the populations of threatened species in recent years due to measures taken against alien species (pp. 3–9 of Annex b-1).
- With regard to the Iriomote cat, which is the top predator with a small population, roadkills are considered to have a material impact on the species population and on the ecosystem of Iriomote

Island. As for the Amami rabbit and the Okinawa rail, it is estimated that the population and distribution of both species are on a recovery trend. Nonetheless, given their high rankings on the IUCN Red List, it is necessary to continue reducing the impact of roadkills on these species. For the Amami rabbit on Tokunoshima Island, the habitat is fragmented between the southern and northern parts of the island, and the impact of roadkill is of greater concern (pp. 10–12 of Annex b-1).

- In addition to these three species, an analysis was conducted on the roadkill trend of the Ryukyu long-haired rat. Furthermore, roadkills of animals on Iriomote Island, including common species, were analyzed. In addition, roadkill data for other endangered species are being collected, including the Okinawa robin, Okinawa woodpecker, Ryukyu black-breasted leaf turtle, and spiny rats. The collected data will be analyzed further (pp. 12–13 of Annex b-1).

2.2.2 Review of the effectiveness of traffic management measures and future approach

- To review the effectiveness of traffic management measures, a list of the existing measures was organized and examination results of the effectiveness of some of these measures in reducing roadkills were compiled. The results showed that many of the measures were effective, but that in some areas the measures were not fully implemented despite the high risk of roadkill. In response to these results, the enhancement of existing measures and implementation of additional measures are under consideration. These include the installation of animal blocking fences on Amami-Oshima Island and Tokunoshima Island, and an examination of the construction of new underpasses and further traffic surveys on Iriomote Island (pp. 14–28 of Annex b-1).
- The roadkill prevention measures will be enhanced, including the installation of additional structures and raising driver awareness on the four islands, while maintaining a collaborative relationship with various entities, such as relevant government organizations, interested parties, and experts, bearing in mind that roads are essential to the livelihoods of local people (p. 29 of Annex b-1).
- In enhancing roadkill prevention measures, the identification of the locations and content of measures that require such enhancement will continue, based on the status of roadkill incidents, traffic conditions, and road structures, in order to adopt the optimal measures for each of these locations. In addition, the effectiveness of the measures taken will be examined through, for instance, an analysis of their degree of impact on threatened species. Furthermore, studies such as an examination of the mechanism of roadkill occurrence will be facilitated to develop more effective countermeasures and approaches (p. 29 of Annex b-1).

2.3 River restoration

c) Developing a comprehensive river restoration strategy in order to transition wherever possible from hard, engineered infrastructure to employ nature-based techniques and rehabilitation approaches such as replenishment, vegetation, and the formation of different habitat types;

2.3.1 Formulation of river restoration strategy

- The Task Force for River Restoration has developed a comprehensive river restoration strategy that indicates the basic approach and process of river restoration on the property, based on discussions and reviews from a scientific perspective among relevant government organizations and six experts in river engineering, disaster prevention engineering, and biology.

- The river restoration strategy developed is as follows:

River Restoration Strategy of Amami-Oshima Island, Tokunoshima Island, Northern Part of Okinawa Island, and Iriomote Island

1. Background to Strategy Formulation

(1) Significance of rivers on the property and background to the installation of river structures

The property contains the most important and significant remaining natural habitats for the in-situ conservation of the unique and rich biodiversity of the central and southern parts of the Ryukyu Chain (Central and Southern Ryukyus) and is of high value for the protection of numerous endemic species and globally threatened species. The species representing the Outstanding Universal Value (OUV) of the property, such as the Amami rabbit, Okinawa rail, and Iriomote cat, mainly inhabit forests. A characteristic of the property is the subtropical marine climate greatly influenced by the warm Kuroshio Current and monsoons. It is an area of abundant water with an annual rainfall of over 2,000 mm, resulting in the formation of small and large river systems within the subtropical rainforest of the property. These river systems provide water and feeding grounds for the species representing the OUV, as well as stable habitats for inland water fish and rheophytes.

In the four regions that comprise the property, the habitats of the threatened and endemic species representing the OUV are close to areas where local people live and industrial activities take place. Over many generations, the regions' natural environment has been used sustainably based

on traditional lifestyles and beliefs so as to support people's livelihoods. Water resources in particular are essential to the livelihoods of the local people. The topography in the four regions are steep, with rivers running a short distance. Because of this, rainwater flows out to the ocean in a relatively short time. In addition, due to the topography with few flat areas, settlements and agricultural lands are concentrated in the flat areas alongside rivers or near the river mouths. As a result, it creates conditions unique to the regions: a relatively high incidence of water shortages and the frequent occurrence of floods in the flat areas. It is therefore very important for people living in the regions to use the limited water resources effectively and to protect their livelihoods from floods and other events that have caused deaths and injuries in the past.

Furthermore, geologically the regions are mainly composed of old sedimentary rocks such as sandstones, shales, and clay-slates from between the Paleozoic and the Mesozoic eras. Many sections are fractured by faults and the surfaces are weathered and vulnerable. In addition, the regions are often struck by typhoons, causing landslides and mudslides in the mountainous areas and floods in downstream river basins. With future climate change, such phenomena could escalate in scale. For these reasons, river structures, including multipurpose dams for water use and control, intake weirs, check dams, and *sabo* check dams have been built since long ago in order to secure water resources for the livelihoods of the local people and to protect themselves and their properties from disasters. The river structures have been regarded as essential.

There has not been clear evidence-based finding on the impact of river structures on wild plants and animals in the property and buffer zones. Because relevant studies have been so few, their impact is currently unknown. In response to the request of the World Heritage Committee (Decision 44 COM 8B.5), a study on river restoration has been initiated in order to maintain and enhance the value of the property. To begin with, the study will be carried out to determine the impact of the river structures on the property and to verify causal relationships.

(2) Basic concept of river management in Japan

As an effort to conserve and restore riverine environments in Japan, the River Act was revised in 1997. The revised River Act added the improvement and conservation of riverine environments as its objective, together with water control and use which were already stipulated. In addition, the Government of Japan established a Basic Policy on Nature-Oriented River Management in 2006 to conserve and create diverse river landscapes, habitats, and breeding environments for wild plants and animals. Furthermore, the Basic Environment Plan approved by the cabinet in 2018 for the conservation of environment prescribes the promotion of green infrastructure projects designed to create sustainable and attractive national lands and local

communities by utilizing the diverse functions of the natural environment (e.g., providing habitats, forming healthy landscapes, controlling temperature rises, preventing and mitigating disasters) in terms of both tangible and intangible aspects, such as the improvement of social overhead capital and land use. The plan also includes the promotion of ecosystem-based disaster risk reduction (Eco-DRR) by identifying the function of the ecosystem which reduces disaster risks and by proactively conserving and restoring the ecosystem.

In keeping with these concepts, Okinawa Prefecture stated its intent to promote the adoption of environmentally-friendly construction methods in the Biodiversity Strategy of Okinawa (2013), announcing that the prefecture would manage its rivers based on the Nature-Oriented River Management concept that advocates river improvements with consideration to biodiversity and the conservation, restoration and creation of diverse river environments as well as habitats and breeding environments for wild plants and animals. For instance, a riverine environment restoration project was implemented on the Oku River in the northern part of Okinawa Island from 2008 to 2018, improving drop structures and restoring riffles and pools by re-establishing the former river channel. This led to the recovery of diverse river flows and habitats, resulting in the sightings of migratory fish such as *Mugil* and *Kuhlia* swimming upstream from the ocean.

Furthermore, the Biodiversity Strategy and Action Plan of Kagoshima Prefecture (2014) positions the promotion of public works with consideration to biodiversity as one of the items of its action plan, requiring that Nature-Oriented River Management be the basis of river improvements and advocating for the establishment of fishways and other measures as well as conservation of diverse waterfront environments, such as riffles and pools which are valuable habitats for fish. Moreover, the Amami Island Group Promotion and Development Plan (2019) lists the implementation of nature restoration-type public works to conserve and restore habitats for animals and plants, such as Ryukyu ayu-fish, as an effort to conserve the value of the world natural heritage.

(3) Establishment of a task force for scientific review on river restoration strategy

At the extended 44th session of the World Heritage Committee held in July 2021, the decision was made to inscribe the property on the World Heritage List and to make four requests to Japan. One of the requests was to develop “a comprehensive river restoration strategy in order to transition wherever possible from hard, engineered infrastructure to employ nature-based techniques and rehabilitation approaches such as replenishment, vegetation, and the formation of different habitat types.” In response to this request, the Government of Japan established a task force comprising six experts in river engineering, disaster prevention engineering, and

biology, as well as relevant administrative organs, discussed the request from scientific perspectives, and formulated the river restoration strategy.

2. Aim of the strategy

This strategy sets out an approach to river restoration for the entire four regions to understand the impact of river structures on the OUV and to consider the actions to be taken for the existing river structures that impact the OUV.

3. Goal

The strategy aims to achieve the following two goals.

- Conduct an assessment to evaluate the impact of river structures on the OUV.
- Take actions wherever possible to mitigate the impact on the OUV identified in the above assessment while ensuring the livelihoods of local people (lives and properties), monitor and assess the impacts of these actions, and achieve river restoration.

4. Basic approach to river restoration

River restoration in this strategy means to restore the natural flows of rivers, including their continuity and disruptions, to improve the diverse habitats of the endemic and threatened species which constitute the OUV in rivers and rely on the natural freshwater process and habitats. Currently, there is a lack of detailed scientific knowledge about the impact of river structures on the OUV and specific causal relationships. As the first step, it is necessary to review literature, monitor the impact of river structures on diadromous fish, rheophytes, amphibians, and so on, and conduct analyses and examinations.

After identifying the specific causal relationships of the impact of river structures, improvement measures will be examined to mitigate such impact, while bearing in mind a transition from hard, engineered infrastructure to employ nature-based techniques and restoration approaches. In considering improvement measures, the local peoples' livelihoods (lives and properties) must be preserved, taking into account the functions the structures play in, for instance, preventing forest deterioration and other disasters. In addition, sufficient consideration must be given to factors such as the stress that might be placed on the current ecosystem from new disruptions caused by the implementation of improvement measures and the impact of incidental actions (e.g., construction of temporary roads, felling of trees, and invasion of alien species). Furthermore, collaboration with the local people, their consensus, and transparency of the process must be ensured.

In recognition that river restoration based on this strategy will be a long-term endeavor, river restoration must take place adaptably while keeping up to date with progress in nature-based river restoration techniques, and carefully considering changes to conditions affecting rivers such as the escalation of disasters due to climate change and population changes in the affected river basins.

5. River restoration process

River restoration will be implemented in the following four phases: impact comprehension phase, restoration policy examination phase, countermeasure implementation phase, and effectiveness examination and monitoring phase.

5.1 Impact comprehension phase

5.1.1 Scope of impact assessment

An impact assessment will be conducted for the list of existing river structures (Annex c-1) standing against the flow of major rivers in the property and its buffer zones provided to IUCN by the Government of Japan as supplementary information in November 2019.

5.1.2 Selection of target species subject to the impact assessment in each river in which the assessed river structures exist

The species to be assessed will be selected from the species (taxonomic groups) representing the OUV in each river in which the assessed river structures exist. These species will be mainly diadromous fish, rheophytes, and amphibians. When selecting the species to be assessed, the reason for their selection must be clearly stated.

5.1.3 Impact comprehension study

After clarifying the impact the assessed river structures have had on the assessed species using existing research papers, interviews with experts, and other means, monitoring will be conducted to evaluate their impact where information is lacking and necessary information will be collected to determine their impact. In evaluating the impact, attention must be paid to understanding which stages of the life history of the species being assessed are affected.

5.1.4 Compiling the results of the impact assessment

The information collected will be sorted based on advice from experts and so on, and the results of the impact assessment of the river structures on the target species will be compiled.

5.2 Restoration policy examination phase

Based on the results of the impact assessment, the specific causal relationships of the impact of the river structures on the OUV will be analyzed and examined, and improvement measures for the river structures will be discussed to remove the factors causing the impact. A study and evaluation of potential risks due to adopting the improvement measures, such as the risks to disaster prevention, will also be conducted and restoration policy will be discussed based on the results of such study and evaluation. In the long term, restoration policy will be reviewed flexibly as changes in the conditions affecting rivers are comprehended. Restoration policy must be examined based on "4. Basic approach to river restoration" mentioned above.

5.3 Countermeasure implementation phase

Countermeasures will be implemented based on the restoration policy discussed. In implementing countermeasures, sufficient attention must be paid to preventing negative impacts on the heritage value, such as the invasion of alien species.

5.4 Effectiveness examination and monitoring phase

After implementing countermeasures, their effectiveness will be monitored and examined. If no improvement is seen, further countermeasures will be implemented, and their effectiveness will be monitored and examined as needed based on the PDCA cycle.

6. Evaluation of river restoration strategy

The strategy will be subject to a review approximately five years after its formulation based on the progress and results of the impact comprehension study.

2.4 Forest management

d) Capping or reducing logging operations in the buffer zones from current levels, both in number and combined size of individual harvesting areas, and ensuring that any logging remains strictly limited to the buffer zones.

2.4.1 Introduction

Amami-Oshima Island, Tokunoshima Island, and Northern part of Okinawa Island (hereinafter, the "Three Regions") have a long-standing practice of logging and using forest resources to produce wood products and for other purposes (pp. 123-124 of the nomination document). Forests in these regions demonstrate rapid regrowth and have a high regeneration capacity (Box 5 on pp. 113-114 of the

nomination document). Wild animals and plants, including rare species, also use the secondary natural environment that emerges after logging as habitat (p. 1 of the Supplementary information of February 2020).

After peaking in the 1970s, logging operations in the Three Regions have been on a declining trend due to a combination of factors. These include the changing demand for timber and cooperative conservation efforts by local communities, forestry operators, administrations, and others.

As the request made by the World Heritage Committee is related to the future of the forestry industry, the administrative organs of the property again had discussion with and interviewed forestry operators about the future of logging activities after receiving the request. Such conversations and interviews confirmed the desire of forestry operators to continue practicing sustainable forestry operations that respect the natural environment of the area into the future. In addition, forestry operators raised a concern about the report submitted in February 2020 which presented an overview of the latest status of logging operations in the buffer zones of the Three Regions (Appendix 1-2-2 on pp. 9-12 of the Supplementary information of February 2020). They were apprehensive about the use of the report as a standard of future harvesting areas because the harvested area presented in that report was based on data from a period of stagnant demand for timber; hence the use of the report as a benchmark may cause problems for the future of the forestry industry. While receiving such views, discussions also took place on further initiatives that should be taken in response to the request.

Based on the results of these discussions with forestry operators and the status of systems concerning logging operations, with advice from experts, the administrative organs examined and organized responses to the request made on logging operations in the buffer zones.

For Amami-Oshima Island, Tokunoshima Island and Northern part of Okinawa Island, in order to achieve both biodiversity conservation and sustainable forestry in accordance with the issues raised in the request, in addition to the measures under the existing system described in 2.4.2, the voluntary measures by forestry operators on forestry operations described in 2.4.3 will be implemented. In the buffer zones on Iriomote Island, no large scale forestry operations have taken place except that island residents used timber in their daily lives in the past. There is also no plan for future logging.

2.4.2 Status of systems concerning logging operations

The property and buffer zones in the Three Regions are designated as National Park (Amami-Oshima Island and Tokunoshima Island: designated in 2017, Northern part of Okinawa Island: designated in 2016 and expanded in 2018). Regulations on logging/timber extraction activities have become effective by these designations, requiring prior approval from the Japanese Government (Ministry of the Environment) for any logging operations under the Natural Parks Act (pp. 1-3 of the Supplementary information of February 2020).

The property is strictly protected as Special Protection Zone and Class I Special Zone of the national parks through the prohibition, in principle, of various acts that impact the preservation of evergreen broadleaved forests as these forests provide important habitats for wildlife, which characterize the nature of the said area. Most of the buffer zones are designated as Class II or III Special Zone of the national parks; actions taken there are hence subject to regulation. To obtain approval, it is necessary to satisfy the approval standards stipulated in the Natural Parks Act.

In the buffer zones on Tokunoshima Island and in Northern part of Okinawa Island, the size of individual harvesting areas is restricted up to 2 ha, in principle. An application must be made to the Ministry of the Environment before logging starts (p. 12 of the Supplementary information of February 2020).

As for Amami-Oshima Island, a special provision to the standards prescribed in the Natural Parks Act was introduced in March 2020, following the exchange of opinions and liaising with forestry operators, experts, and other parties. This special provision was designed to enable sustainable forestry operations which would conserve biodiversity and the habitats of rare species, while considering economic rationales, based on scientific insights into the high regeneration capacity of subtropical laurel forests (Box 5 on pp. 113-114 of the nomination document). Due to this special provision, the size of individual harvesting areas on Amami-Oshima Island is greater than those on Tokunoshima Island and Northern part of Okinawa Island, with a maximum of 10 ha. The provision, however, also sets out in detail matters requiring consideration. These include the establishment of the reserved belts of forests (e.g., no logging in the forests within 20 m from a Special Protection Zone and Class I Special Zone and within 20 m on each side of major ridges, and so on) and the use of the skyline logging method as the basic method so as not to cause soil damage. Logging operations will not be permitted unless these rules are observed. In addition, forestry operations are conducted in consideration of the natural environment and ecosystem; for instance, no logging around user facilities and the adoption of a logging method with less disturbance to forest land (e.g., use of chainsaws instead of heavy harvesting machineries)(pp. 4-5 of Annex d-1).

In addition to the Natural Parks Act, the Forest Act prescribes matters such as a notification system for logging and post-logging reforestation. Notification of logging and other such acts must be submitted to the municipality in which the forest is located.

Local forestry operators conduct forestry operations in compliance with the afore-mentioned regulations. They have also begun to play proactive roles for the conservation of biodiversity in local forests through conducting activities outsourced by relevant government organizations, such as anti-poaching patrols to protect rare species and the monitoring of rare and alien species. They are willing to continue to conduct sustainable forestry operations that takes into consideration the local natural environment.

A report by Mr. Bastian Bertzky, who was invited to the site in 2018, pointed out that forestry

operations conducted under the above-mentioned regulations falls under sustainable use (pp.1-17 of Annex 1 to the nomination document).

2.4.3 Approach to logging operations in the buffer zones

In cooperation with forestry operators, the following initiatives will be taken based on the results of discussions with forestry operators following the receipt of the request, the status of systems concerning logging operations, and expert advice.

- First, continuous efforts will be made to ensure compliance with the approval standards and the matters requiring consideration explained in 2.4.2, such as the rule on the size of individual harvesting areas under the Natural Parks Act. These are established from the viewpoints of both forestry operations and the inhabitation of rare species, endemic species and so on.
- Next, given that the buffer zones have the function to support the protection of the property, the maximum annual volume of timber harvested in the buffer zones shall be set. Specifically, this should be within the range of annual forest growth while maintaining the standing stock necessary to maintain the forests' function to preserve biodiversity and to produce timber, as calculated for each municipality.
- Furthermore, the newly developed "Forestry Operation Policy in Consideration of the Natural Environment on Amami-Oshima Island and Tokunoshima Island", which includes two points mentioned above, and the "Policy for the Promotion of the Yambaru Model Forestry" (pp. 151-163 of Annex 2 to the nomination document) were prepared for each region as voluntary regulations to show the basic direction of forestry operation that respects forests' dual function of preserving biodiversity and producing timber. Based on these, forestry operations will be carried out with consideration for the natural environment (Annex d-1, d-2).
- Relevant government organizations will continue monitoring and managing the logging and regeneration of forests through systems such as the prior permission application procedure under the Natural Parks Act and the notification system requiring the submission of reports on logging and the status of post-logging reforestation under the Forest Act.
- Lastly, as an important initiative, a forum will be provided every year for forestry businesses, relevant government organizations, etc. to share information, such as location and area of scheduled logging sites. In this forum, adjustments may be made as needed by, for instance, requesting a forestry operators to change its logging plan from the viewpoint of conserving biodiversity and important habitats of rare species based on the impact to the property. This will make logging operations better aligned with conservation efforts.

Furthermore, in response to the request, a new survey will be conducted in logged areas, scheduled sites of future logging, and their surroundings on Amami-Oshima Island. The survey is designed to

comprehend the regeneration process of forests and the relationship between logging operations and the status of wild fauna and flora. It will cover themes such as forest composition, vegetation, soil, and the habitat of wild animals and plants. Using the results of this survey and regular monitoring (to be explained below), the degree of the impact of logging operations in buffer zones on the OUV of the property will be assessed. These results will be shared with forestry operators and relevant government organizations at the afore-mentioned information-sharing forum on Amami-Oshima Island and Tokunoshima Island so that they can be utilized for future initiatives and adjustments. In Northern part of Okinawa Island, surveys have already been conducted on forest composition, vegetation, soil, status of wild animals and plants, and other matters. The results of these surveys will likewise be shared with forestry operators and relevant government organizations at the information-sharing forum, and will be utilized for future efforts.

In the property, the administrative organs conduct annual monitoring on the status of species representing the conservation status of diverse habitats required to maintain various endemic species and/or threatened species which represent the OUV, and on changes to the total forested area, based on the “Monitoring Plan for Amami-Oshima Island, Tokunoshima Island, Northern Part of Okinawa Island and Iriomote Island nominated for Inscription on the World Heritage List ” (pp. 101-122 of the Supplementary information of November 2019).

In conclusion, logging operations in the property are strictly prohibited, while logging operations in the buffer zones are managed in collaboration between forestry businesses and relevant government organizations through, for instance, information sharing and liaising, while making efforts to ensure strict compliance with various regulations and voluntary regulations. In addition, measures will be implemented where necessary based on surveys and monitoring, as well as seeking expert opinions when needed.

3. Other current conservation issues identified by the State Party which may have an impact on the property's Outstanding Universal Value

There are no other conservation issues identified by Japan which may impact the OUV of the property.

4. In conformity with Paragraph 172 of the Operational Guidelines, describe any potential major restorations, alterations, and/or new construction(s) intended within the property, the buffer zone(s) and/or corridors or other areas, where such developments may affect the Outstanding Universal Value of the property, including authenticity and integrity.

There are no development projects in and around the property which may affect the OUV of the property.

5. Public access to the state of conservation report

Japan accepts upload of full reports for public access on the World Heritage Centre's State of Conservation Information System.

6. Signature of the Authority

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