

## Monitoring

- **6.a.** Key Indicators for Measuring State of Conservation
- 6.b. Administrative Arrangements for Monitoring Property
- **6.c.** Results of Previous Reporting Exercises



Banded ground gecko (Goniurosaurus splendens), Tokunoshima Island (Photo: MOEJ)

## 6. Monitoring

#### 6.a. Key Indicators for Measuring State of Conservation

Table 6-1 shows a list of key indicators that are thought to serve as measures of the nominated property's conservation status.

The three species used to indicate heritage values and integrity are endemic species and threatened species that serve a flagship role for the purpose of ecosystems and biodiversity conservation on the respective islands. As these species are designated as National Endangered Species under the Act on Conservation of Endangered Species of Wild Fauna and Flora, actions are underway as per protection and recovery program, in cooperation with a broad range of organizations concerned, to monitor their status and to combat traffic accidents, alien species, and other threats. While on another front, tourism offers opportunities to deepen understanding about the values of the property, as any disorderly business expansion or over-exploitation might eventually impair their heritage values.

These species will be monitored as key indicators in order to track the conservation status of the nominated property's values and the effects of protection management measures, and reflect the findings obtained in the work to administer proper management. Since the endemic species and threatened species, as well as alien species and tourism activities selected as the key indicators, also interact the peripheral areas outside of the nominated property and the buffer zones, the work of monitoring will be performed with those areas covered as well.

Table 6-1: List of key indicators for the nominated property's conservation status

|   |                              |              | Locations covered      |                       |                                    |                 | þ                            |  |  |
|---|------------------------------|--------------|------------------------|-----------------------|------------------------------------|-----------------|------------------------------|--|--|
| Monitoring viewpoints   | Specifics Key indicator      |              | Amami-Oshima<br>Island | Tokunoshima<br>Island | Northern part of<br>Okinawa Island | Iriomote Island | Survey period                | Organization to maintain information (Implementing organization)         |  |
| A. State of heritage values   | •Distribution status         | Amami rabbit | •                      | •                     | _                                  | _               | r/<br>trs                    | •Naha Nature<br>Conservation Office<br>•Kyushu Regional<br>Forest Office |  |
| Whether the endemic species and threatened                                  |                              | Okinawa rail | _                      | _                     | •                                  | _               | Every year/<br>every 5 years |  |  |
| species and inreatened<br>species indicating OUV are<br>maintained          |                              | Iriomote cat | _                      | _                     | _                                  | •               |                              |  |  |
| B. Status of integrity  |                              | Amami rabbit | •                      | •                     | _                                  | _               |                              | Conscivation Office  |  |
| Whether anthropogenic impacts on the endemic species and threatened         | •Number of traffic accidents | Okinawa rail | _                      | -                     | •                                  | -               | Every year/<br>every 5 years |  |  |
| species and directified<br>species are reduced, or past<br>impacts improved | •Number of roadkills         | Iriomote cat | _                      | _                     | _                                  | •               |                              |  |  |

|  |   |                                      | Loc                    | cation                | s cove                             | red             | g             |  |
|--|---|--------------------------------------|------------------------|-----------------------|------------------------------------|-----------------|---------------|--|
| Monitoring viewpoints  | Specifics   | Key indicator                        | Amami-Oshima<br>Island | Tokunoshima<br>Island | Northern part of<br>Okinawa Island | Iriomote Island | Survey period | Organization to maintain information (Implementing organization)   |
| C. Status of protection management Whether the number of   | • CPUE (relative habitat density) • Distribution status   | Mongoose                             | •                      | _                     | •                                  | -               | Every<br>year | •Naha Nature<br>Conservation Office<br>•Okinawa Prefecture   |
| * The status of the endemic species and threatened species as its effect is addressed in A above                               | •Distribution status •Number and percentage of microchipped pet cats  | Cats                                 | •                      | •                     | •                                  | •               | Every year    | •Naha Nature Conservation Office •Kagoshima Prefecture •Okinawa Prefecture •Municipalities concerned •Veterinary Medical Association |
| D. Sustainable tourism use Whether tourism use of the nominated property and areas surrounding it is done in a sustainable way | •Number of inbound visitors and travelers per island •Number of users of leading establishments •Number of ecotour participants within national forests | Tourism users                        | •                      | •                     | •                                  | •               | Every year    | •Naha Nature Conservation Office •Kyushu Regional Forest Office •Kagoshima Prefecture •Okinawa Prefecture •Municipalities concerned  |
|  | •Number of accredited guides •Number of businesses that have signed a conservation and utilization agreement  | Eco-tour<br>guides and<br>businesses | •                      | •                     | •                                  | •               | Every year    | •Amami Island Group Regional Administration Association •Okinawa Prefecture  |

In addition to the monitoring on three species above, the following indicators represent information that can be obtained from studies, action projects, and other measures conducted periodically, and therefore can serve as additional indicators to complement the key indicators listed above, for the purpose of tracking the status of heritage value conservation and the effects of protection management measures (Table 6-2).



Iriomote cat (Photo: MOEJ)

Table 6-2: Indicators for complementary use in addition to key indicators for determining the nominated property's conservation status

|   |  |  | Locations covered      |                       |                                    | red             |                              | Organization  |
|---|--|--|------------------------|-----------------------|------------------------------------|-----------------|------------------------------|---|
| Monitoring viewpoints   | Specifics                              | Key indicator  | Amami-Oshima<br>Island | Tokunoshima<br>Island | Northern part of<br>Okinawa Island | Iriomote Island | Survey period                | Organization maintaining information (Implementing organization)  |
|   |  | [Mammals]<br>Spiny rats,<br>long-haired rats,<br>etc.  | •                      | •                     | •                                  | -               | Every year/<br>every 5 years | •Naha Nature<br>Conservation Office<br>•Kyushu Regional<br>Forest Office  |
|   | demic endemic species and rare species | [Birds] Amami jay (Garrulus lidthi), Amami thrush (Zoothera dauma major), Okinawa woodpecker (Sapheopipo noguchii), Amami woodcock (Scolopax mira), etc. | •                      | •                     | •                                  | _               | Every year/<br>every 5 years | •Naha Nature Conservation Office •Kyushu Regional Forest Office •Private organizations  |
| A. Status of heritage values Whether the endemic species and threatened |  | [Reptiles] Ground geckoes, Ryukyu black- breasted leaf turtle, etc.  | _                      | •                     | •                                  | _               | Every year/<br>every 5 years | •Naha Nature<br>Conservation Office<br>•Kyushu Regional<br>Forest Office  |
| species indicating OUV are maintained                                   |  | [Amphibians] Ishikawa's frogs, tip-nosed frogs, Otton frog (Babina subaspera), Namie's frog (Limnonectes namiyei), etc.                                  | •                      | •                     | •                                  | -               | Every year/<br>every 5 years | •Naha Nature<br>Conservation Office<br>•Kyushu Regional<br>Forest Office  |
|   |  | [Insects]<br>Yanbaru long-<br>armed scarab<br>beetle, etc.   | -                      | _                     | •                                  | _               | Every year/<br>every 5 years | •Naha Nature Conservation Office •Kyushu Regional Forest Office •Yanbaru Long- Armed Scarab Beetle Poaching Prevention Council •Private organizations |

|   |   |   |                        | Locations covered     |                                    |                 |                           | Organization   |
|---|---|---|------------------------|-----------------------|------------------------------------|-----------------|---------------------------|--|
| Monitoring viewpoints   | Specifics   | Key indicator   | Amami-Oshima<br>Island | Tokunoshima<br>Island | Northern part of<br>Okinawa Island | Iriomote Island | Survey period             | maintaining information (Implementing organization)  |
| B. Status of integrity Whether any impact or                              | Meteorological data, including temperatures, precipitation, number of typhoons developed and landing                    | Meteorological changes in the nominated property  | •                      | •                     | •                                  | •               | Every day                 | •Japan<br>Meteorological<br>Agency   |
| any sign of impact of<br>climate change or<br>disasters is detected early | Composition of species that occurred, numbers and populations of those species, etc.                                    | Changes in the vegetation and in the fauna of mammals and birds (e.g., alien species of a southern origin)        | •                      | •                     | •                                  | •               | Every year/ every 5 years | •Ministry of the Environment Biodiversity Center of Japan •Kyushu Regional Forest Office   |
| C. Status of protection management  | Number of alien<br>species confirmed to<br>have encroached or<br>become established                                     | Status of invasion/<br>establishment of<br>alien species in<br>general  | •                      | •                     | •                                  | •               | As needed                 | •Naha Nature<br>Conservation Office<br>•Kyushu Regional<br>Forest Office   |
| 1) Whether the number of alien species posing a threat is reduced         | Number of days no cane toad was spotted lien species posing a  Number of days no cane toad was spotted Target number of |   | _                      | _                     | 1                                  | •               | Every year                | •Naha Nature<br>Conservation Office  |
| 2) Whether poacher<br>encroachment is<br>prevented                        | Number of patrols per<br>year, number of<br>engaged staff<br>members, etc.  | Status of implementation of steps to prevent illegal collecting and capturing of endemic species and rare species | •                      | •                     | •                                  | •               | As needed                 | •Naha Nature Conservation Office •Kyushu Regional Forest Office •Amami Island Group Rare Wildlife Protection Program Council •Yanbaru Long- Armed Scarab Beetle Poaching Prevention Council •Private organizations |

#### 6.b. Administrative Arrangements for Monitoring Property

Coordination and cooperation system is established among relevant government agencies, relevant organizations and researchers. The information obtained during the monitoring or research is shared on the website as appropriate and used effectively.

#### 6.c. Results of Previous Reporting Exercises

Many studies, research and conservation projects have been conducted in the nominated property up until now. The papers and reports from those endeavors that have relevance to the key indicators listed in Table 6-1 relative to the nominated property's conservation status are listed below, together with summary descriptions (Table 6-3).

Table 6-3: Previous studies on key indicators for the nominated property's conservation status

| Editor/author, year of publication                             | Paper or report title   | Issuer   | Summary description  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|--|
| Relevant to the Amam   | Relevant to the Amami rabbit  |  |  |  |  |  |  |  |  |
| Kagoshima<br>Prefecture Board of<br>Education (1977)           | Study on the Actual Condition of<br>the Special Natural Monument<br>Amami Rabbit        | Kagoshima<br>Prefecture Board<br>of Education              | For the purpose of obtaining basic data on protection management measures for the Amami rabbit as a special natural monument, the ecology of the Amami rabbit was grasped on the basis of resident questionnaires and field surveys, along with a report being issued on the results of estimating their habitat distribution range and population.  |  |  |  |  |  |  |
| Nature Conservation<br>Bureau,<br>Environment<br>Agency (1994) | Study on the Actual Condition of<br>Rare Wildlife Habitats in the<br>Amami Island Group | Nature<br>Conservation<br>Bureau,<br>Environment<br>Agency | A survey was conducted on the status and habitat environments of rare species in the Amami Island Group that are particularly important for conservation purposes (e.g., Amami rabbit, Ryukyu long-haired rat, spiny rats), as well as of alien species causing impacts on them, along with a report being issued on the results of deliberations about conservation measures.   |  |  |  |  |  |  |
| Nature Conservation<br>Bureau,<br>Environment<br>Agency (1995) | Report on the Survey in Areas<br>with Biodiversity (Amami Island<br>Group Region)       | Environment<br>Agency                                      | From the standpoint of biodiversity conservation, a survey was conducted on Amami-Oshima Island and Tokunoshima Island of the Amami Island Group to investigate the status and habitat environments of rare mammals for which there were particular concerns over population declines (five species including the Amami rabbit), along with a report being issued on the results of deliberations about conservation measures. |  |  |  |  |  |  |

| Editor/author, year of publication   | Paper or report title   | Issuer  | Summary description   |
|--|---|---|---|
| Nature Conservation<br>Bureau,<br>Environment<br>Agency (1999)   | Survey on the Actual Condition<br>for Designation as a Nationally<br>Endangered Species and for Other<br>Purposes: the Amami Rabbit | Environment<br>Agency   | With the aim of developing basic data for selection as a National Endangered Species under the Act on the Conservation of Endangered Species of Wild Fauna and Flora, a report is issued on the findings from a survey conducted on Amami-Oshima Island and Tokunoshima Island to comprehend the status of the Amami rabbit, the current condition of their habitats, and impacting factors.                                  |
| Relevant to the Okinav   | wa rail   |   |   |
| Agency for Cultural<br>Affairs (1983)  | Special Study Report on the Natural Monument: Okinawa Rail (Rallus okinawae)  | Agency for<br>Cultural Affairs  | A report on the findings from studies conducted after discovery of the species in 1981 for natural monument designation purposes, to investigate its taxonomic position, developments leading to the discovery, the distribution of locations where it was spotted and its carcass collected, its habitat environment, issues for conservation purposes, etc.   |
| Nature Conservation<br>Division,<br>Department of the<br>Environment and<br>Public Health,<br>Okinawa Prefecture<br>(1989- 1994) | Habitat Environment Survey I to<br>VII on Special Birds, etc. and<br>Other Species  | Nature Conservation Division, Department of the Environment and Public Health, Okinawa Prefecture | For the purpose of expanding the Wildlife Protection Area designated by Okinawa Prefecture in the northern part of Okinawa Island, a report is issued on the findings from a survey of the distribution of animals, including mainly special birds under the (now-repealed) "Act on Regulation of Transfers, etc. of Special Birds, etc." (Okinawa rail, Okinawa woodpecker, Amami woodcock and others), and some amphibians. |
| Environment<br>Agency (1982, 84,<br>85, 86, 88, 89, 91, 92,<br>93)   | Survey Report on Special Birds, etc.  | Environment<br>Agency   | A report on the findings from a survey conducted to investigate the status of special birds, etc. under the (now-repealed) "Act on Regulation of Transfers, etc. of Special Birds, etc." (Okinawa rail, Okinawa woodpecker, Amami jay, Amami thrush, Ryukyu robin and white-backed woodpecker (Dendrocopos leucotos owstoni)).  |
| Naha Nature<br>Conservation Office,<br>Ministry of the<br>Environment<br>(2008~2016?)  | Okinawa Rail Status Survey<br>Report  | Naha Nature<br>Conservation<br>Office, Ministry of<br>the Environment                             | To understand the distribution of the species, play-back study is conducted in three Yambaru villages.  |

| Editor/author, year of publication  | Paper or report title  | Issuer   | Summary description  |  |  |  |  |
|---|--|--|--|--|--|--|--|
| Relevant to the Iriomote cat  |  |  |  |  |  |  |  |
| Environment Agency<br>(1975 - 1977)   | Research on the Ecology and<br>Protection of the Iriomote Cat: First<br>to Third Reports (1975 - 1977)   | Environment<br>Agency  | The first set of findings from the comprehensive survey conducted by the Ministry of the Environment at approximately ten-year intervals starting in 1973 in order to reveal the ecology of the Iriomote cat and comprehend its status.  |  |  |  |  |
| Environment Agency<br>(1983 - 1985)   | Survey for the Purpose of<br>Measures to Conserve the Habitat<br>Environments, etc. of the Iriomote<br>Cat (1983 – 1985)                       | Environment<br>Agency  | The second set of findings from the comprehensive survey conducted by the Ministry of the Environment at approximately ten-year intervals starting in 1973 in order to reveal the ecology of the Iriomote cat and comprehend its status.   |  |  |  |  |
| Environment Agency<br>(1993 - 1994)   | Special Survey Project Report on<br>Iriomote Cat Habitats (1993 – 1994)  | Environment<br>Agency  | The third set of findings from the comprehensive survey conducted by the Ministry of the Environment at approximately ten-year intervals starting in 1973 in order to reveal the ecology of the Iriomote cat and comprehend its status.  |  |  |  |  |
| University of the<br>Ryukyus (2008)   | (Fourth) Comprehensive Survey<br>Report on the Status, etc. of the<br>Iriomote Cat   | Ministry of the<br>Environment   | The fourth set of findings from the comprehensive survey conducted by the Ministry of the Environment at approximately ten-year intervals starting in 1973 in order to reveal the ecology of the Iriomote cat and comprehend its status.   |  |  |  |  |
| Okinawa Forestry<br>Station, Kumamoto<br>Regional Forestry<br>Office, Forestry<br>Agency<br>(1994 - 1998) | Endangered Species of Wild Fauna<br>and Flora Protection Management<br>Measure Study Report on the<br>Iriomote Cat: First to Fourth<br>Reports | Okinawa Forestry<br>Station, Kumamoto<br>Regional Forestry<br>Office, Forestry<br>Agency | As a protection management project for National Endangered Species under the Act on the Conservation of Endangered Species of Wild Fauna and Flora, a survey was conducted to develop a general outline of the status and habitat environments of the Iriomote cat and its prey animals, along with a report being issued on impacting factors for conservation purposes and on the results of deliberations about protection management measures. |  |  |  |  |

| Editor/author, year of publication   | Paper or report title  | Issuer  | Summary description   |
|--|--|---|---|
| Naha Nature Conservation Office, Ministry of the Environment/ Okinawa District Forest Office, Kyushu Regional Forest Office, Forestry Agency (1996~ 2016?) | Iriomote Cat Protection and<br>Recovery Project Implementation<br>Report   | Naha Nature Conservation Office, Ministry of the Environment Office/ Okinawa District Forest Office, Kyushu Regional Forest Office, Forestry Agency | A detailed summary of the project implemented by the Ministry of the Environment and the Forestry Agency pursuant to the protection and recovery project plan. A report on the findings from a monitoring survey based on automated photography and spotting information, and surveys on traffic accident prevention steps and domestic cat situations.       |
| Relevant to mongoose   | s and feral cats   |   |   |
| Sadao Ikehara<br>(editor and author)<br>(1991)   | Influence upon wildlife by introduced animals in the Nansei-Shoto Islands  | World Wide Fund<br>for Nature Japan<br>(WWF Japan)  | A report on the findings from studies conducted to obtain basic data for wildlife species conservation on the major islands of the Nansei-Shoto Islands - Amami-Oshima Island, Okinawa Island and Iriomote Island - with respect to the types and distribution ranges of alien animals, and their impacts on biota.   |
| Kagoshima<br>Prefecture<br>(1996 - 2000)   | Study Report for the Introduced<br>Species (Mongoose) Elimination<br>and Control Model Project in the<br>Insular Region  | Environment Agency / Kagoshima Prefecture   | For the purpose of conserving the biota unique to Amami-Oshima Island, the status and biological characteristics of mongooses were grasped, along with a report being issued on the results of deliberations about their impacts on native species and about countermeasures, capture methods, and elimination and control structure developments, etc.       |
| Ministry of the<br>Environment<br>(2001 - 2004)  | Introduced Species (Mongoose)<br>Elimination Project Report  | Ministry of the<br>Environment  | As a result of the above model project, a shift to a full-scale elimination project followed as prompt action was required. Based on the outcomes of elimination efforts over three years, a report is issued on the results of deliberations about population reduction, the possibility of eradication, and elimination policy and planning.                |
| Ministry of the<br>Environment<br>(2005 - 2016)  | Report on the Javan Mongoose<br>Control Project on Amami-<br>Oshima Island (2005 - 2014)<br>Report on the Small Indian<br>Mongoose Control Project on<br>Amami-Oshima Island (2015 - 2016) | Ministry of the Environment   | A report on the results of the mongoose control project implemented on Amami-Oshima Island by the Ministry of the Environment (e.g., capturing mongooses and tracking their status, examining effective control methods, monitoring the recovery of native species) pursuant to a control implementation plan under the Specified Invasive Alien Species Act. |

| Editor/author, year of publication  | Paper or report title   | Issuer   | Summary description   |
|---|---|--|---|
| Northern Dam<br>Administration<br>Office, Okinawa<br>General Bureau<br>(1994 - 1997)  | Biological Environment Study<br>Data in the Northern Region of<br>Okinawa's Main Island<br>(Mongoose)   | Northern Dam<br>Administration<br>Office, Okinawa<br>General Bureau                                | Results of surveys conducted on the capture and feeding habits of alien mammals (mongooses and domestic cats), which are considered among the factors inhibiting the distribution of native species in the northern part of Okinawa Island.   |
| Nature Conservation<br>Division Department<br>of Cultural and<br>Environmental<br>Affairs, Okinawa<br>Prefecture<br>(2001- 2016?) | Mongoose Elimination Contract<br>Work Report  | Nature Conservation Division, Department of Cultural and Environmental Affairs, Okinawa Prefecture | Results of a survey on mongoose control implemented by Okinawa Prefecture in order to recover the habitat range of rare wildlife in the northern part of Okinawa Island, and on the progress of rare species recovery.  |
| Naha Nature<br>Conservation Office,<br>Ministry of the<br>Environment<br>(2010 - 2016)  | Report on the Project for<br>Controlling Javan Mongooses, etc.<br>in the Northern Region of<br>Okinawa Island (2010 - 2014)<br>Report on the Project for<br>Controlling Small Indian<br>Mongooses, etc. in the Northern<br>Region of Okinawa Island<br>(2015- 2016) | Naha Nature<br>Conservation<br>Office, Ministry of<br>the Environment                              | Results of the mongoose control project implemented in the northern part of Okinawa Island by the Ministry of the Environment (e.g., capturing mongooses and tracking their status, examining effective control methods, monitoring the recovery of rare native species) in accordance with a control implementation plan developed pursuant to the Specified Invasive Alien Species Act. |
| Naha Nature<br>Conservation Office,<br>Ministry of the<br>Environment<br>(2015 - 2016)  | Report on the Alien Mammal Status Survey Aimed at Recovering Ecosystems of Tokunoshima Island (2015) Report on the Feral Cat Control Implementation Aimed at Recovering the Ecosystems of Tokunoshima Island (2016)   | Naha Nature<br>Conservation<br>Office, Ministry of<br>the Environment                              | Results of a survey on the status of domestic cats that are affecting the Amami rabbit and other rare species on Tokunoshima Island, the estimation of cats population, distribution range, distribution density, etc., and deliberations about future measures.  |
| Watari et al. (2013)  | Evaluating the "recovery level" of endangered species without prior information before alien invasion. Ecology and Evolution. 3(14): 4711–4721.   | John Wiley & Sons<br>Ltd.  | A method of calculating numerical targets to evaluate the level of recovery of indigenous species was developed. In reference to the mongoose control project on Amami-Oshima Island, it was demonstrated that the populations of the Amami rabbit and three indigenous frog species had made a remarkable recovery.  |

| Editor/author, year of publication                                       | Paper or report title  | Issuer   | Summary description   |
|--|--|--|---|
| Fukasawa et al. (2013)   | Differential population responses of native and alien rodents to an invasive predator, habitat alteration, and plant masting.  Proceedings of Royal Society B: Biological Sciences. 280: 2013 - 2075.  | The Royal Society  | A method of calculating numerical targets to evaluate the level of recovery of indigenous species was developed. In reference to the mongoose control project on Amami-Oshima Island, it was demonstrated that the populations of the Ryukyu long-haired rat and the Amami spiny rat, both indigenous species, had made a remarkable recovery and that there had been no sign of increases of black rats, an alien species.                                 |
| General research, etc.   | on the natural environment and wildl   | ife  |   |
| WWF Japan<br>Scientific Committee<br>(ed) (1984 - 1985)                  | The Nansei-Shoto Islands and<br>Their Nature Protection: I - II  | World Wildlife<br>Fund Japan                               | Results of a basic survey on the fauna of the Nansei-Shoto Islands, which were expected to see various problems between nature protection and development arise in the future (species list, distribution data, literature list), and a biological and sociological survey on the islands inhabited by major internationally rare species (the Amami rabbit for Amami-Oshima Island and the Iriomote cat for Iriomote Island).                              |
| Nature Conservation<br>Bureau,<br>Environment<br>Agency<br>(1989 - 1991) | Research on the Conditions Essential for the Preservation of Wildlife Species in the Nansei- Shoto Islands Survey Report on the Northern Part of Okinawa Island (1989) Survey Report on the Sakiyama Peninsula District of Iriomote Island (1990) Survey Report on Amami- Oshima Island (1990) Summary Report (1991) | Nature<br>Conservation<br>Bureau,<br>Environment<br>Agency | Results of surveys with the aim of summarizing the conservation measures in the important regions of the Nansei-Shoto Islands (Amami-Oshima Island, northern part of Okinawa Island, Iriomote Island). Overviews of the weather and geographical and geological formations of each region, the findings from survey data on the distribution of vegetation, flora and fauna (vertebrate animals, insects, and invertebrate animals), and a summary thereof. |
| Nature Conservation<br>Bureau,<br>Environment<br>Agency (1994)           | Study on the Actual Condition of<br>Rare Wildlife in the Amami Island<br>Group   | Nature<br>Conservation<br>Bureau,<br>Environment<br>Agency | A survey was conducted on the status and habitat environments of rare species in the Amami Island Group that are particularly important for conservation purposes (e.g., Amami rabbit, Ryukyu long-haired rat, spiny rats), as well as of alien species causing impacts on those rare species, along with a report being issued on the results of deliberations about conservation measures.  |

| Editor/author, year of publication   | Paper or report title   | Issuer   | Summary description   |
|--|---|--|---|
| Kagoshima<br>Prefectural Museum<br>(1996)  | Kagoshima Nature Study Project<br>Report III: Nature in Amami                                 | Kagoshima<br>Prefectural<br>Museum   | Overviews of the weather, geographical and geological formations of the Amami Island Group, and a report on the island-specific data on the vegetation, flora and fauna (e.g., vertebrates, insects, land snails, crustaceans), and on the findings from a field survey on Tokunoshima Island.                                    |
| Environment<br>Agency (2000)   | Amami-Oshima Island Rare<br>Wildlife Survey Report  | Environment<br>Agency  | A report on the findings from survey data<br>on the distribution of rare species (e.g.,<br>vertebrates, insects, land snails,<br>myriapods, higher plants) on Amami-<br>Oshima Island and Tokunoshima Island.   |
| Okinawa District Nature Conservation Office, Nature Conservation Bureau, Ministry of the Environment, (2001) | Iriomote National Wildlife<br>Protection Area Survey Report                                   | Okinawa District<br>Nature<br>Conservation<br>Office, Nature<br>Conservation<br>Bureau, Ministry<br>of the Environment | For the purpose of shedding light on the status of the Iriomote cat and the status within the inland wildlife protection area, for which surveys had been scarce, a report is issued on a survey using automated photography, census, etc. and on the results of deliberations about impacting factors and conservation measures. |
| Naha Nature<br>Conservation Office,<br>Ministry of the<br>Environment (2005)                                 | Mt. Yuwandake National Wildlife<br>Protection Area Survey Report                              | Okinawa District Nature Conservation Office, Nature Conservation Bureau, Ministry of the Environment                   | A report on the findings from a survey on the status of birds and animals, including rare species, conducted as basic data for the purpose of designating a national wildlife protection area in Mt. Yuwandake on Amami-Oshima Island.  |
| Shigeki Yasumura,<br>WWF Japan (ed.)<br>(2009)   | A Collection of Reports on<br>Biodiversity Evaluation Projects in<br>the Nansei-Shoto Islands | World Wide Fund<br>for Nature Japan  | A report on the selection and mapping of areas of priority for biodiversity conservation purposes on the Nansei-Shoto Islands, and on the findings from a field survey, including the distribution range of Okinawa spiny rats.   |

| Editor/author, year of publication  | Paper or report title                          | Issuer   | Summary description   |
|---|--|--|---|
| Relevant to sustainabl  | e use in tourism                               |  |   |
| Amami Island<br>Group Tourism<br>Association /<br>Oshima Branch<br>Office, Kagoshima<br>Prefecture (- 2016) | Trends of Tourism in the Amami<br>Island Group | Amami Island<br>Group Tourism<br>Association /<br>Oshima Branch<br>Office, Kagoshima<br>Prefecture | A report on various statistical surveys conducted every year to grasp the trends of tourism in the Amami Island Group, including the number of inbound visitors, total number of travelers, number of inbound visitors by island, by month and by point of departure, number of users of establishments, etc. |
| Okinawa Prefecture<br>(- 2016)  | Tourism Directory                              | Okinawa<br>Prefecture  | A report on various statistical surveys conducted every year to grasp the trends of tourism in Okinawa Prefecture, including the number of inbound visitors, tourist trends, tourism revenues, accommodations, etc.   |
| Okinawa Prefecture<br>( - 2016)   | Yaeyama Tourism Statistics                     | Okinawa<br>Prefecture  | A report on the statistical survey conducted every year about tourism trends in the Yaeyama region of Okinawa Prefecture, including the number of inbound visitors by island.   |



Nertera yamashitae (Photo: Hiroshi Yamashita)



Quercus miyagii (Photo: MOEJ)

# 7

## Documentation

- 7.a. Photographs and Audiovisual Image Inventory and Autorization Form
- 7.b. Texts Relating to Protective Designation, Copies of Property Management Plans or Documented Management System and Extracts of Other Plans Relevant to the Property
- 7.c. Form and Date of Most Recent Records or Inventory of Property
- 7.d. Address Where Inventory, Records and Archives Are Held
- 7.e. Bibliography



Okinawa rail (Gallirallus okinawae), the northern part of Okinawa Island (Photo: MOEJ)

## 7. Documentation

#### 7.a. Photographs and Audiovisual Image Inventory and Autorization Form

|     |        |  |      |              |           | Contact detail | Nonexclusive |
|-----|--------|--|------|--------------|-----------|----------------|--------------|
| No. | Format | Caption  | Date | Photographer | Copyright | of copyright   | cession of   |
|     |        | T. C.  |      |              | owner     | owner          | rights       |
|     |        |  |      |              |           |                |              |
| 1   | jpg    | Evergreen broadleaved forest (Amami-Oshima Is.)                | 2011 |              | MOEJ*1    | MOEJ           | Yes          |
| 2   | jpg    | Mt. Inokawadake (Tokunohsima Is.)                              | 2008 |              | JWRC*2    | JWRC           | yes          |
| 3   | jpg    | Evergreen broadleaved forest (Northern part of Okinawa Island) | 2016 |              | MOEJ      | MOEJ           | yes          |
| 4   | jpg    | Mt. Komidake (Iriomote Is.)                                    | 2010 |              | MOEJ      | same as above  | yes          |
| 5   | jpg    | View from the Funaura Bay (Iriomote Is.)                       | 2010 |              | MOEJ      | same as above  | yes          |
| 6   | jpg    | Cloud forest (Northern part of Okinawa Is.)                    | 2003 |              | MOEJ      | same as above  | yes          |
| 7   | jpg    | Mountain stream (Amami-Oshima Is.)                             | 2012 |              | MOEJ      | same as above  | yes          |
| 8   | jpg    | Mangrove forest (Nakama River, Iriomote Is.)                   | 2009 |              | MOEJ      | same as above  | yes          |
| 9   | jpg    | Cardiandra amamiohsimensis                                     | 2012 |              | MOEJ      | same as above  | yes          |
| 10  | jpg    | Arisaema heterocephalum  | 2012 |              | MOEJ      | same as above  | yes          |
| 11  | jpg    | Viola amamiana   | 2010 |              | MOEJ      | same as above  | yes          |
| 12  | jpg    | Asarum simile  | 2013 |              | MOEJ      | same as above  | yes          |
| 13  | jpg    | Platanthera sonoharae  | 2010 |              | MOEJ      | same as above  | yes          |
| 14  | jpg    | Solenogyne mikadoi   | 2013 |              | MOEJ      | same as above  | yes          |
| 15  | jpg    | Dendrobium okinawense  | 2007 |              | MOEJ      | same as above  | yes          |
| 16  | jpg    | Amami rabbit (Pentalagus furnessi)                             | 2012 |              | MOEJ      | same as above  | yes          |
| 17  | jpg    | Iriomote cat (Prionailurus bengalensis iriomotensis)           | 2006 |              | MOEJ      | same as above  | yes          |
| 18  | jpg    | Amami spyny rat (Tokudaia osimensis)                           | 2014 |              | MOEJ      | same as above  | yes          |
| 19  | jpg    | Tokunoshima spiny rat (Tokudaia tokunoshimensis)               | 2015 |              | MOEJ      | same as above  | yes          |
| 20  | jpg    | Okinawa spiny rat (Tokudaia muenninki)                         | 2009 |              | MOEJ      | same as above  | yes          |
| 21  | jpg    | Ryukyu long-haired rat (Diplothrix legata)                     | 2008 |              | MOEJ      | same as above  | yes          |
| 22  | jpg    | Amami jay (Garrulus lidthi)                                    | 2015 |              | MOEJ      | same as above  | yes          |
| 23  | jpg    | Okinawa rail (Gallirallus okinawae)                            | 2007 |              | MOEJ      | same as above  | yes          |
| 24  | jpg    | Okinawa woodpecker (Sapheopipo noguchii)                       | 2012 |              | MOEJ      | same as above  | yes          |
| 25  | jpg    | Amami woodcock (Scolopax mira)                                 | 2014 |              | MOEJ      | same as above  | yes          |
| 26  | jpg    | Amami thrush (Zoothera dauma major)                            | 2007 |              | MOEJ      | same as above  | yes          |
| 27  | jpg    | White-backed woodpecker (Dendrocopos leucotos owstoni)         | 2013 |              | MOEJ      | same as above  | yes          |
| 28  | jpg    | Ryukyu black-breasted leaf turtle (Geoemyda japonica)          | 2008 |              | MOEJ      | same as above  | yes          |
| 29  | jpg    | Yellow-margined box turtle (Cuora flavomarginata)              | 2011 |              | MOEJ      | same as above  | yes          |
| 30  | jpg    | Banded ground gecko (Goniurosaurus splendens)                  | 2014 |              | MOEJ      | same as above  | yes          |
| 31  | jpg    | Kuroiwa's ground gecko (Goniurosaurus kuroiwae)                | 2009 |              | MOEJ      | same as above  | yes          |
| 32  | jpg    | Kishinoue's giant skink (Plestiodon kishinouyei)               | 2008 |              | MOEJ      | same as above  | yes          |
| 33  | jpg    | Anderson's crocodile newt (Echinotriton andersoni)             | 2015 |              | MOEJ      | same as above  | yes          |
| 34  | jpg    | Amami tip-nosed frog (Odorrana amamiensis)                     | 2014 |              | MOEJ      | same as above  | yes          |
| 35  | jpg    | Okinawa tip-nosed frog (Odorrana narina)                       | 2009 |              | MOEJ      | same as above  | yes          |
| 36  | jpg    | Greater tip-nosed frog (Odorrana supranarina)                  | 2006 |              | MOEJ      | same as above  | yes          |
| 37  | jpg    | Utsunomiya's tip-nosed frog (Odorrana utsunomiyaorum)          | 2007 |              | MOEJ      | same as above  | yes          |
| 38  | jpg    | Amami Ishikawa's frog (Odorrana splendida)                     | 2012 |              | MOEJ      | same as above  | yes          |
| 39  | jpg    | Okinawa Ishikawa's frog (Odorrana ishikawae)                   | 2009 |              | MOEJ      | same as above  | yes          |
| 40  | jpg    | Namie's frog (Limnonectes namiyei)                             | 2008 |              | MOEJ      | same as above  | yes          |
| 41  | jpg    | Otton frog (Babina subaspera)                                  | 2008 |              | MOEJ      | same as above  | yes          |
| 42  | jpg    | Holst's frog (Babina holsti)                                   | 2008 |              | MOEJ      | same as above  | yes          |
| 43  | jpg    | Yanbaru long-armed scarab beetle ( <i>Cheirotonus jambar</i> ) | 2005 |              | MOEJ      | same as above  | yes          |
| 44  | jpg    | Damsel fly (Rhinocypha uenoi)                                  | 2016 |              | MOEJ      | same as above  | yes          |
| 45  | jpg    | Asahina's skipper (Ochlodes asahinai)                          | 2009 |              | MOEJ      | same as above  | yes          |

<sup>\*1:</sup> Ministry of the Environment

<sup>\*2:</sup> Japan Wildlife Research Center

## 7.b. Texts Relating to Protective Designation, Copies of Property Management Plans or Documented Management System and Extracts of Other Plans Relevant to the Property

Appendix 3: Legal instruments of protection applying to the nominated property

Appendix 1 and 4: Management Plan and other plans applying to the nominated property

#### 7.c. Form and Date of Most Recent Records or Inventory of Property

| Article | Content   | Implementing organization                                    | Form   | Date                           |
|---------|---|--|--|--------------------------------|
| Geology | Seamless Digital Geological Map of Japan (1:200,000)  | Geological survey of Japan,<br>AIST                          | https://gbank.gsj.jp/<br>seamless/index_en.html?                 | 2015                           |
| Climate | Automated Meteorological Data Acquisition System (AMeDAS) In order to observe weather conditions such as rain, wind, snow, observations at manned stations cover amonut of precipitation, wind direction/speed, air temperature, sunshine duration. All of these elements are observed automatically. | Japan Meteorological Agency                                  | http://www.data.jma.go.jp/<br>obd/stats/data/mdrr/index.<br>html | every 10<br>minutes<br>- hours |
|         | Past Weather Data Search  | Japan Meteorological Agency                                  | http://www.data.jma.go.jp/<br>obd/stats/etrn/index.php           | 2016                           |
|         | Radar-AMeDAS rainfall   | Japan Meteorological Agency                                  | DVD  | 2016                           |
| Plant   | National Survey on the Nature<br>Environment - vegetation survey, etc.  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/<br>kiso/fnd_f.html                      | 2016                           |
|         | National Survey on the Nature<br>Environment - vegetation survey.<br>Browse Vegetation Map · Download<br>GIS data   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://gis.biodic.go.jp/<br>webgis/index.html                    | 2016                           |
|         | Threatened Wildlife of Japan -Red list - Plant I (vascular plant)   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html                           | 2015                           |
|         | Threatened Wildlife of Japan -Red list - Plant II (nonvascular plant)   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html                           | 2015                           |
| Mammal  | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (mammal)  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html                          | 2002                           |
|         | Threatened Wildlife of Japan - Red list revision mammalia   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html                           | 2015                           |
| Aves    | Threatened Wildlife of Japan - Red list - Aves  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html                           | 2015                           |
|         | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Aves)  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html                          | 2004                           |

| Article                           | Content   | Implementing organization                                    | Form                                       | Date |
|-----------------------------------|---|--|--|------|
| Amphibia /<br>Reptile             | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Amphibia / Reptile)          | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2001 |
|                                   | Threatened Wildlife of Japan - Red list - Amphibia / Reptile  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html     | 2015 |
| Insect                            | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (beetles)                     | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Cicadas & Aquatic Hemiptera) | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Butterflies)                 | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Dragonflies)                 | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Threatened Wildlife of Japan - Red list - Insect  | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html     | 2015 |
| Arachnida /<br>Myriapoda          | Threatened Wildlife of Japan - Red list - Arachnida / Myriapoda   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html     | 2015 |
| Land & Fresh<br>Water<br>Mollusks | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Land & Fresh Water Mollusks) | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Threatened Wildlife of Japan - Red list - Land & Fresh Water Mollusks   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb f.html     | 2015 |
| Fish                              | Distribution Map The National Survey on the Natural Environment Report of the distributional survey of Japanese animals (Fresh water fish)            | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/kiso/fnd_f.html    | 2002 |
|                                   | Threatened Wildlife of Japan - Red list<br>- Brackish /Fresh water Fish   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/<br>rdb/rdb_f.html | 2015 |
| Crustacean                        | Threatened Wildlife of Japan - Red list revision Crustacean, etc.   | Biodiversity Center of Japan,<br>Ministry of the Environment | http://www.biodic.go.jp/rdb/rdb_f.html     | 2015 |

#### 7.d. Address Where Inventory, Records and Archives Are Held

Biodiversity Center of Japan, Nature Conservation Bureau, Minstry of the Environment 5597-1 Kenmarubi, Kamiyoshida, Fujiyosida City, Yamanashi Prefecture 403-0005

TEL: +81-555-72-6031 FAX: +81-555-72-6035

Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology

1-1-1 Higashi, Tsukuba City, Ibaraki Prefecture 305-8567

TEL: +81-29-861-3540 FAX: +81-29-861-3746

Japan Meteorological Agency

1-3-4 Otemachi, Chiyoda-Ku, Tokyo 100-8122

TEL: +81-3-3212-8341



Polystichum obae (Photo: MOEJ)

#### 7.e. Bibliography

(Note: English translations of titles in Japanese are tentative, unauthorized, and only for information purposes)

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#### 2. Description

- 2.a. Description of Property
- 2.a.1. Overview of the natural environment of the nominated property
- 2.a.1.1. Geology and geography
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Amami Rabbit (Pentalagus furnessi) (Photo: MOEJ)

#### Column 2. Amami rabbit (Pentalagus furnessi)

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Okinawa woodpecker (Sapheopipo noguchii)
(Photo: MOEJ)

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Stag beetle (*Neolucanus insulicola*) (Photo: MOEJ)

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Narrow-mouthed toad (*Microhyla okinavensis*)
(Photo: MOEJ)

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Ryukyu leopard plant (Farfugium japonicum var. luchuense) (Photo: MOEJ)

#### 4. State of Conservation and Factors Affecting the Property

#### 4.a. Present State of Conservation

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Sphenomeris minutula (Photo: JWRC)

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#### 4.b. Impacting Factors

#### 4.b.(i). Development pressures

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#### 4.b.(iv). Responsible visitation at World Heritage sites

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Kanpiree waterfalls, Iriomote Island (Photo: MOEJ)

## 8

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- 8.b. Official Local Institution / Agency
- 8.c. Other Local Institutions
- 8.d. Official Web Address



Iriomote cat (Prionailurus bengalensis iriomotensis), Iriomote Island (Photo: MOEJ)

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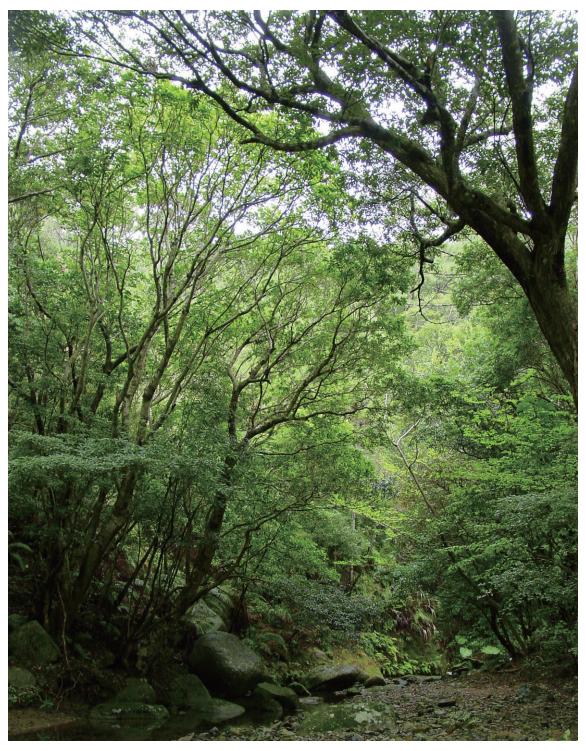
8.d. Official Web Address

About property management plan

URL: http://kyushu.env.go.jp/naha/nature/index.html

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Riparian forest in Tokunoshima Island (Photo: MOEJ)

# 9

### Signature on behalf of the State Party



Humid subtropical rainforest (Photo: MOEJ)

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