Ogasawara Islands

Ecosystem Conservation Action Plan

(English translation for World Heritage nomination)

November 2009

Kanto Regional Environment Office of Japan
Kanto Regional Forest Office
Tokyo Metropolitan Government
Ogasawara Village
Japan
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1. What Is the Ecosystem Conservation Action Plan?

1) Background and Objective

- Human influences, including alien species invasions, threaten parts of the Ogasawara Islands. Therefore, to institute necessary measures for correcting such influences, the “Ecosystem Conservation Action Plan” providing specific action plans has been prepared according to Paragraph 116 of the “Operational Guidelines for the Implementation of the World Heritage Convention”.
- This Action Plan is supplemental material for the “Ogasawara Islands, Management Plan for World Heritage Nomination” and will be attached to the nomination dossier.

   【UNESCO Operational Guidelines for the Implementation of the World Heritage Convention (excerpt)】

   116. Where the intrinsic qualities of a property nominated are threatened by action of man and yet meet the criteria and the conditions of authenticity or integrity set out in paragraphs 78–95, an action plan outlining the corrective measures required should be submitted with the nomination file. Should the corrective measures submitted by the nominating State Party not be taken within the time proposed by the State Party, the property will be considered by the Committee for delisting in accordance with the procedure adopted by the Committee.

2) Relation to Other Plans

- This action plan corresponds to the "Ecosystem Conservation Action Plan” provided in the Management Plan, and its effectiveness is thereby guaranteed.

   【Management Plan “5. Management Measures”(excerpt)】

   2) Strategic Conservation of Ecosystems by Island …… (omitted) ……

   Various activities focused on alien species countermeasures have been initiated by management authorities on the Ogasawara Islands. Based on the results of these activities, effective conservation of Ogasawara ecosystems will continue through cooperation and close coordination of relevant parties based on long-term goals and the measures described below.

   As a short-term strategy, an Ecosystem Conservation Action Plan under the Management Plan has been evaluated and prepared. The action plan presents short-term targets, priorities, and details of countermeasures based on knowledge of interspecific relationships that vary by island. Ecosystem conservation and management measures, including alien species countermeasures, will be appropriately and systematically implemented based on this action plan.

- On the basis of the above description from the Management Plan, the Action Plan and Management Plan will play the following roles.

<table>
<thead>
<tr>
<th>Management Plan</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Area</strong></td>
<td>Comprehensive plan related to conservation and management of the natural environment of the Ogasawara Islands</td>
</tr>
<tr>
<td><strong>Target Period</strong></td>
<td>Demonstrate the plan for the next approximately 5–10 years to achieve long-term goals. Revised as necessary, in response to changes in the natural environment and social circumstances.</td>
</tr>
<tr>
<td><strong>Promoting Agencies</strong></td>
<td>All parties related to the Ogasawara Islands</td>
</tr>
<tr>
<td><strong>Specific action plans to correct human influences (mainly plans concerning ecosystem conservation on each island).</strong></td>
<td>Mainly the management authorities (bodies implementing the projects and surveys)</td>
</tr>
</tbody>
</table>

3) Structure and Content

- According to the Management Plan, the following 19 islands, which are the main islands of the Ogasawara Islands, are set as the targets for the Action Plan.
- For Chichijima Island and Hahajima Island, specific action plans are given for three regions of important conservation value on each island.
  - Chichijima Island: Chichijima, Anijima, Ototojima, Nishijima, Higashijima, Minamijima
  - Hahajima Island: Hahajima, Mukojima, Anejima, Imotojima, Meiijima, Hirashima
  - Mukojima Island: Mukojima, Kitanojima, Nakodojima, Yomejima, Nishinoshima, Kita-Iwoto, Minami-Iwoto
- The Action Plan for each target island is composed of two main components: “Short-term Target up to FY 2012” and “Diagram of Interspecific Relationships”. In addition, “Activity” is also described and is linked to the Management Plan. “Envisaged achievement (e.g., completion or onset of measures)” is also described.
- The specific connections among the contents of the Management Plan and Action Plan are as follows.

![Diagram of Interspecific Relationships](image)

* To clearly connect the Management Plan and Action Plan, linked content is contained in both plans.

- Content considered in the Management Plan
- Content considered in the Action Plan
2. Short-term Approaches for the Entire Ogasawara Islands

- Sclerophyllous scrub (eastern part of Chichijima and on Anijima) and subtropical rainforest (Sekimoon region of Hahajima) foster a number of endemic species; these ecosystems are representative of the Ogasawara Islands and have extremely high heritage value. Therefore, conservation measures, including those to eliminate alien species, are considered. On Anijima, area exclusion of alien species such as *Casuarina*, *Pinus* *latifrons*, and *Leucaena* will be carried out while monitoring the entire gently sloped land of the plateau, which is inhabited by *Cinchidea bonitensis*; these measures will be carried out by FY 2012, the target year of the Action Plan. On Hahajima, alien species with the largest impact, such as *Bischofia*, will be eliminated by area exclusion measures conducted through the cooperation of the MOE and FA, starting from the northern part of the island. (*Refer to the following page for the definition of “area exclusion” as used here.)

- Precious endemic species inhabit Anijima and Ootojima, and greater efforts and achievements in eradicating alien species have occurred on these islands than on other islands. Therefore, these islands serve as models for the ecosystem conservation framework. On both of these islands, the aim is complete strategic eradication of alien animals and area exclusion. As for plants, application of adaptive management principles based on a plan-do-check-action (PDCA) cycle, including monitoring and evaluation, the effectiveness of the mechanisms will be demonstrated.

- Feral goats have had large impacts on the flora and distribution of seabird breeding habitat. Much time and effort have been invested in efforts to eradicate feral goats on numerous islands including those of the Mukojima Island Group. As eradication had been achieved on Anijima by FY 2008, elimination was also initiated on Ototojima in FY 2008, with eradication targeted to be completed by FY 2011. On Chichijima, area exclusion will be initiated from FY 2009 as a short-term approach. Thereafter, eradication is planned through continuous implementation of strategic elimination targeting the whole island.

- Black rats have impacted native flora and fauna such as endemic land snails. The black rat is also considered to play a role in inhibiting vegetation recovery on islands where feral goat eradication had been completed. Black rat eradication was initiated on Nishijima in FY 2007. In FY 2008, elimination was also initiated on Mukojima, where vegetation had not recovered satisfactorily after feral goat eradication, and on Higashijima, where black rat predation pressure on seabirds had been identified. For Higashijima, complete eradication is targeted by FY 2009. Elimination will continue on Nishijima and Mukojima with the aim of complete eradication by FY 2012. On Anijima and Ootojima, where vegetation recovery is expected after feral goat eradication, will be initiated by FY 2009. Following work on those islands, elimination will be initiated, one island at a time, on the other peripheral islands of Chichijima (e.g., Minamijima, Hitomarujima, and Hoyoanjima), which are important breeding grounds for seabirds. According to accomplishment status, elimination will then be carried out on peripheral islands of Hahajima such as Mukojima, Imotojima, Nakodojima, and Yomejima, which are important habitat for endemic birds and seabirds. The black rat is an important food source of the common buzzard. Therefore, in areas of the Chichijima and Hahajima island groups where common buzzard inhabituation has been identified, monitoring surveys of the common buzzard will be conducted with the island group as a survey unit, along with the black rat elimination.

- Feral cats inhabit Chichijima and Hahajima, with smaller numbers also living on Anijima and Ootojima. As the black rat is the major food source for feral cats, the exclusion of feral cats will be carried out simultaneously with the elimination of black rats on Anijima and Ootojima, to prevent birds such as the wood-pigeon becoming the next predation target of feral cats. Hence, eradication of black rats will be the first step. In addition, Higashijima on Chichijima and Minamijima on Hahajima are important habitats for wood-pigeon and seabirds. Fences will be installed around these areas to prevent feral cat invasion from the outside. Exclusion will also be conducted by removing live animals from inside the fenced areas. For effective implementation of island-wide measures against feral cats on Chichijima and Hahajima, separate implementation plans will be established for each island, and proper measures for keeping domestic cats will be promoted.

- Albatrosses as well as many other seabirds breed in the Mukojima Island Group. The black-footed albatross (*Pheobeastria nigripes*) and the Laysan albatross (*Phoebeastria immutabilis*) have known breeding grounds on Mukojima. Action plans for albatrosses’ breeding grounds have been implemented since FY 2007 and are planned to be continued. Mukojima is also an important habitat for endemic forest insects of Mukojima Island Group, and thus forest recovery is an important issue. Eradication of feral goats has already been completed on Mukojima, and eradication for the black rat has begun, with complete eradication targeted by FY 2012. At the same time, ongoing elimination is being carried out to remove alien plants, including *Leucaena* alien bamboo species, and *Ficus microcarpa*. After the completion, other alien species will be monitored and will be managed adaptively.

- Although feral goat eradication has been completed on Nakodojima as well as Mukojima, soil erosion due to vegetation damage caused by feral goat continues. Therefore, measures such as vegetation restoration have been implemented to recover the soil basement. Along with these measures, eradication of major alien plants such as *Leucaena* and alien bamboo and dwarf bamboo species is to be completed by FY 2012.

- Sclerophyllous scrub typical of the Hahajima Island Group in relatively healthy condition covers extensive portions of the Hahajima peripheral islands. Conservation of this vegetation is particularly important on Mukojima for various reasons, including as *Symplaca bonitensis* habitat. Therefore, elimination of *Casuarina* will be implemented on Mukojima before on other Hahajima peripheral islands. The elimination will be preceded by and conducted on the basis of research on the dependency of species such as *Carduellis unica kitteki* and endemic land snails on *Casuarina*.

- With regard to rat eradication on Kita-Iwoto, necessary measures will be considered once black rat eradication efforts have been completed on other islands.

- Minami-Iwoto has an extremely high heritage value as it remains in primeval condition, has experienced only small impact by alien species, and has not yet been invaded by the black rat. For this reason, in principle, human influences will continue to be excluded as much as possible, and long-term monitoring will be conducted.

- When eliminating alien species, the removal of one impact factor from the current interspecific relations may lead to unexpected problems such as expansion of new alien species. On the other hand, in some cases, the endemic or endangered species to be conserved have become dependent on an alien species as their habitat or food source. Therefore, when implementing measures against alien species, it is necessary to use an adaptive management approach based on monitoring conducted before and after the elimination.

- Currently, modeling of changes in interspecific relations due to alien species eliminations within the sclerophyllous scrub ecosystems of Anijima and Chichijima is being conducted by an expert working group established by the FA. Results from these analyses will be applied to alien species elimination projects throughout the Ogasawara Islands, hereafter.

**Schedules for Chichijima, Anijima, Ototojima, and Hahajima are given on the following pages**

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<td>Target year</td>
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<td>Black rat eradication (Nishijima, Mukojima, Higashijima)</td>
<td>Black rat eradication (Nishijima, Mukojima, Higashijima)</td>
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<td>Construction of a new breeding ground for albatrosses (Mukojima)</td>
<td>Leucaena, bamboo, <em>Ficus microcarpa</em> eradication (Mukojima)</td>
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<td>Casuarina area exclusion (Mukojima)</td>
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*Definitions within the text*
- With regard to animals, “eradication” is a “condition” where no individual is left on an island. With regard to plants, “eradication” is a “condition” where the main trees for woody plants and the main colony for herbaceous plants are kept to zero or in extremely low-density status on an island.
- With regard to animals, “area exclusion” is an “action” to remove individuals to achieve a “condition” where no individual is left within a specific area. With regard to plants, “area exclusion” is an “action” to maintain the main trees for woody plants and the main colony for herbaceous plants to zero or in extremely low-density status within a specific area.
- With regard to animals, “area exclusion” is an “action” to remove individuals to achieve a “condition” where no individual is left within a specific area. With regard to plants, “area exclusion” is an “action” to maintain the main trees for woody plants and the main colony for herbaceous plants to zero or in extremely low-density status within a specific area.
- Especially for plants, after “eradication” or “area exclusion”, monitoring will be continuously carried out, and measures such as scraping off shoots, extracting young trees, and preventing the invasion of other alien plant species will be implemented.
- The “specific area” mentioned above for the area exclusion is an area of sufficient scale for effective conservation, in which certain objectives of the work plan have been achieved.

*The following abbreviations are used within this Action Plan: MOE: Ministry of the Environment, FA: Forestry Agency, TMG: Tokyo Metropolitan Government, and FFPRI: Forestry and Forest Products Research Institute.*
3. Island-by-Island Ecosystem Conservation Action Plan

**Chichijima Island**

- **Feral goats** impact native and endemic vegetation and especially affect the sustainability of the sclerophyllous scrub ecosystem spread across the Higashidaira and Mt. Chuouan region of Chichijima, which contains endemic species such as *Callicarpa parvifolia* and *Cepedeastrum grandicolor*. Therefore, the MOE is considering setting up **feral goat** and **feral cat** fences. The installation work is planned to begin from FY 2009, following coordination with related agencies and experts, with the aim of project completion by FY 2012. The fences will achieve area exclusion of **feral goats** within the Higashidaira and Mt. Chuouan region.

- With regard to island-wide feral goat measures on Chichijima, related agencies such as the MOE, FA, TMG, and Ogasawara Village are cooperating to consider feral goat elimination for the island. Coordination among agencies will be obtained, and starting in FY 2010, continuous implementation of strategic elimination will be initiated to rapidly decrease the number of individuals to a low density and ultimately achieve eradication.

- The entire area of Higashidaira is an important habitat and breeding ground for the **Japanese wood-pigeon**. Thus, the FA has designated the region as a **wood-pigeon** sanctuary. Local NPOs and other parties are cooperating to conserve and maintain suitable forest habitat for the **wood-pigeon** by activities such as elimination of alien species and promotion of appropriate forest use. These efforts will be continued. Furthermore, because **feral cat** present a predation risk, the MOE is planning to erect **feral goat** and **feral cat** fences to achieve complete area exclusion of both animals within the Higashidaira region by FY 2011. In addition, based on the implementation plan established by the Ogasawara Cat Liaison Committee, capturing of feral cats will be continuously implemented in the surrounding mountain region in parallel with the aim of achieving island-wide exclusion.

- On Chichijima and Hahajima, to cut off a source of new **feral cats**, appropriate measures for keeping domestic cats will also be strictly implemented by the Ogasawara Cat Liaison Committee, Tokyo Veterinary Medical Association, and other parties. Thus, the measures against feral cats will be conducted in cooperation with measures regarding domestic cats.

- As the **sclerophyllous scrub** in the Higashidaira and Mt. Chuouan region is a habitat for particularly endangered endemic plant species, the FA, in cooperation with local NGOs and other parties, has eliminated alien plants such as *Bischofia*, *Casuarina*, and *Pinus lutchuensis* and will continue this work. Area exclusion of *Bischofia* will be completed by FY 2009, and measures such as extraction of young trees will be carried out as necessary thereafter. In addition, implementation of elimination to achieve island-wide eradication of *Bischofia* will be considered.

- With regard to **Psidium littorale**, *Ficus microcarpa*, and *Leucaena*, conservation targets, and invasion status will be determined and their elimination along with species such as *Casuarina* will be considered. Elimination activities aimed at species such as *Casuarina* and *Pinus lutchuensis* will be expanded to the whole area of Yoakedaira where **sclerophyllous scrub** is distributed.

- With regard to **flatworm planaria**, area defense measures to block unaided movement of **planaria** species will be established, and area defense measures will be implemented in un-invaded areas that are still inhabited by **endemic land snails** (especially *Mandarina* species). These areas include Yoakedaira, Toriyama, Tatsumizaki, and Nishikaigan. These measures will be implemented by the target date of FY 2012.

- **Habitat** of the endemic species *Ogasawara lineatus* is found in the southern region of Chichijima, but is under predation pressure by the **green anole**. Measures against **green anoles** and **cane toads** will be considered for important areas for conservation. These include *Ogasawara lineatus* habitat, areas near water bodies where natural replenishment of dragonflies such as *Hemiscordula ogasawarenisis* from Anijima is expected, and rocky desert vegetation in the entire Higashidaira area where natural re-colonization of *Cicindela bonina* is anticipated.

- With regard to the **Bonin flying fox** on Chichijima, the population size is being continuously monitored, and measures to reduce agricultural damage by the **flying fox** are being tested. Awareness raising and supportive measures for farmers and other related parties will be continued hereafter. For conservation of **Bonin flying fox** group roosts, measures for co-existence and coordination with tourism use in the surrounding region are being developed and expanded to include evaluation of the protective measures for regional conservation.

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<td><strong>Tentative list</strong></td>
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<td>Feral goat (Higashidaira: area exclusion)</td>
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<td>Feral goat (Chichijima island-wide: consider exclusion methods—to suppress to low density—eradication)</td>
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<td>Feral cat (Higashidaira: area exclusion)</td>
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<td>Feral cat (Chichijima island-wide: exclusion within the area surrounding the area exclusion zone—to low density—exclusion)</td>
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<td>Casuarina, <em>Pinus lutchuensis</em>, <em>Psidium littorale</em> and other alien plant species (Higashidaira &amp; Yoakedaira)</td>
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<td>Bischofia (Higashidaira)</td>
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<td>Spatial management of alien species (Higashidaira)</td>
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<td>Flatworm planaria (Yoakedaira, Toriyama, Tatsumizaki)</td>
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<td>Green anole</td>
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# Chichijima Island (Higashidaira and Mt. Chuosan Region)

## Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrub and Schima mertensiana forest</td>
<td>Elimination of feral goats</td>
<td></td>
<td>Setting up and partially complete erection of fences to prevent the invasion of feral goats and feral cats in the Higashidaira area. Targeting completion in 2010. Achievement of exclusion within the fenced areas. <strong>[MOE]</strong></td>
<td></td>
<td>Implement feral goat elimination within fenced areas. <strong>[MOE]</strong></td>
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<td>Implementation of elimination as a countermeasure against agricultural damage on Chichijima. <strong>[Ogasawara Village]</strong></td>
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<td>Continue with the activities listed on the left. <strong>[Ogasawara Village]</strong></td>
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<td>Research on the inhabitation status and initiating studies of effective eradication procedures. <strong>[MOE, FA, TMG, and Ogasawara Village]</strong></td>
<td></td>
<td>Initiate strategic eradication activities (in the whole region) with cooperation among agencies, starting from FY 2009. <strong>[MOE, FA, TMG, and Ogasawara Village]</strong></td>
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<td></td>
<td>Elimination of Casuarina and Pinus sotavennas</td>
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<td>Initiating area exclusion</td>
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<td>Continue and expand area exclusion</td>
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<td>Promoting area exclusion in Higashidaira. <strong>[NGOs and others]</strong></td>
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<td>Continue area exclusion</td>
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<td></td>
<td>Elimination of Bischotia</td>
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<td>Completion of area exclusion</td>
<td></td>
<td>Area exclusion planned to be completed by FY 2009, with germination treatment and other follow-up work thereafter. (Higashidaira wood-pigeon sanctuary). <strong>[NPO, FA, and others]</strong></td>
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<td></td>
<td>Elimination of Psidium littorale</td>
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<td>Initiating a survey to determine the existing condition</td>
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<td>Continue area exclusion</td>
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<td>Estimating the distribution status of alien woody plants using aerial photographs. <strong>[FA]</strong></td>
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<td>Continue with the activities listed on the left. <strong>[NPO, FA, and others]</strong></td>
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<td>Protection of endangered plants</td>
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<td>Setting up protective nets</td>
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<td>Continue protection</td>
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<td>Setting up protective nets around endangered plants growing in Higashidaira to protect them from feral goat grazing <strong>[TMG]</strong></td>
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<td>Continue with the activities listed on the left. <strong>[MOE]</strong></td>
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<tr>
<td>2. Habitat conservation for wood-pigeon</td>
<td>Exclusion of feral cats</td>
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<td>Initiating area exclusion</td>
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<td>Complete area exclusion</td>
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<td>Initiating exclusion</td>
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<td>Complete feral cat exclusion within fenced areas in the Higashidaira area. <strong>[MOE]</strong></td>
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<td>Establishment of fences to prevent invasion by feral goats and cats in Chichijima’s Higashidaira region, targeting completion in 2010. Removing (excluding) feral goats and cats from within and also at outside of the fenced areas. <strong>[MOE]</strong></td>
<td></td>
<td>Based on the effectiveness of fencing and capturing measures in Higashidaira, consider exclusion measures of the island. <strong>[MOE, FA, TMG, Ogasawara Village]</strong></td>
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<td></td>
<td>Elimination of black rats</td>
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<td>(To be addressed on medium- and long-term bases)</td>
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<td>3. Habitat restoration for endemic insects</td>
<td>Elimination of the green anole</td>
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<td>(To be addressed on medium- and long-term bases)</td>
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*Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

* Correspond to [Blue] in the figure below
### Activity

1. **Conservation of sclerophyllous scrubs and Schima mertensiana forests**
   - **Envisaged achievement**: The sclerophyllous scrub vegetation in the entire Higashidaira region, where Chichijima’s original vegetation is still well preserved, will be appropriately conserved. In forests, which are widely distributed in the central to southern parts of the island, ongoing activities include the elimination of alien species to promote adaptive conservation management measures considering already established interspecific relationships.
   - **Short-term target after nomination**: Continue with the activities listed on the left. *Ogasawara Village*
   - **Medium-term target (by the end of FY 2009)**: Initiating strategic eradication activities (in the whole region) with cooperation among all related agencies, starting from FY 2009. *MOE, FA, TMG, Ogasawara Village*
   - **Long-term target (by the end of FY 2012)**: Concluding a maintenance agreement with NPOs and other groups for Yoakedaira and promoting preventive measures against feral goats. *MOE, FA, TMG, Ogasawara Village*

2. **Habitat conservation for land snails**
   - **Envisaged achievement**: The southern region and Yoakedaira are important habitat for land snails such as Mandarina chochijimana, which are valuable in ecological and evolutionary biology studies. In these regions, measures will focus on preventing the invasion of flatworm planaria and conserving the habitat of existing land snails.
   - **Short-term target after nomination**: Continue with the activities listed on the left. *Ogasawara Village*
   - **Medium-term target (by the end of FY 2009)**: Initiating area exclusion
   - **Long-term target (by the end of FY 2012)**: Conduction of monitoring surveys and Yoakedaira.

### Action Item

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrubs and Schima mertensiana forests</td>
<td>Elimination of feral goats</td>
<td>Initiating strategic measures with cooperation among all relevant agencies</td>
<td>Implementation of elimination as a countermeasure against agricultural damage on Chichijima. <em>Ogasawara Village</em></td>
<td>Continue with the activities listed on the left. <em>Ogasawara Village</em></td>
<td>Continue and expand area exclusion</td>
</tr>
<tr>
<td></td>
<td>Elimination of Casuarina and Pinus lutchuensis</td>
<td>Initiating area exclusion</td>
<td>Implementation of elimination in the Nagashida region of Chichijima. <em>NPO</em></td>
<td>Continue with the activities listed on the left. <em>NPO, FA, and others</em></td>
<td>Continue the activities listed on the left. <em>NPO, FA, and others</em></td>
</tr>
<tr>
<td></td>
<td>Elimination of Ficus microcarpa, Leucaena, Plodium alborea, and other alien invasive species.</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Determination of the distribution status of alien woody plants based on aerial photograph analysis. <em>FA</em></td>
<td>Continue the activities listed on the left. <em>NPO, FA, and others</em></td>
<td>Continue the activities listed on the left. <em>NPO, FA, and others</em></td>
</tr>
<tr>
<td>3. Habitat conservation for land snails</td>
<td>Elimination of flatworm planaria</td>
<td>Initiating area defense</td>
<td>Conducting trials of specific measures for area defense within the Yoakedaira region of Chichijima (installation of electric fences to interrupt unaided movement), examining the effectiveness of measures, and carrying out demonstration experiments to establish proven area defense measures. <em>MOE</em></td>
<td>Set up sanctuaries in land snail habitats (e.g., Yoakedaira), and implement preventive measures against invasion. <em>MOE</em></td>
<td>Set up sanctuaries in land snail habitats (e.g., Yoakedaira), and implement preventive measures against invasion. <em>MOE</em></td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correspond to in the figure below

<table>
<thead>
<tr>
<th>Legend</th>
<th>Relevant conservation area</th>
<th>High conservation priority endemic and threatened species</th>
<th>Other endemic and threatened species</th>
<th>Native species etc.</th>
<th>Invasive alien species</th>
<th>Invasive alien species to be addressed in the short-term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relevant conservation area</td>
<td>High conservation priority endemic and threatened species</td>
<td>Other endemic and threatened species</td>
<td>Native species etc.</td>
<td>Invasive alien species</td>
<td>Invasive alien species to be addressed in the short-term</td>
</tr>
</tbody>
</table>

Common buzzard

Feral cat

Birds

Preying

Black rat

Preying

Preying

Preying

Preying

Wood-pigeon

Feral goat

Insects

Pollination

Important habitat for land snails

Mandarina suenoae

Mandarina mandarina

Boninena callistoderma

Sclerophyllous scrub ecosystem (Distolitho-Pouterietum dubiae)

Symlocos kawakamii

Pittosporum parvifolium

Eurya japonica subsp. Palauensis

Santalum boninense

Callicarpa glabra

Callicarpa parvifolia

Other plants

Schima mertensiana forest ecosystem

Area exclusion [NPOs etc., MOE, FA, TMG, Ogasawara Village]

Legend

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term

Interspecific relations

Interspecific relations that influence

Habitat invasion

Preying

Competition

Preying

Preying

Preying

Area defense [MOE]
The sclerophyllous scrub vegetation in the entire Higashidara region, where Chichijima’s original vegetation is still well preserved, will be appropriately conserved. In Schima mertensiana forests, which are widely distributed in the central to southern parts of the island, ongoing activities include the elimination of alien species to promote adaptive conservation management measures considering already established interspecific relationships.

Feral goats are the major impact factor. Expulsion of goats will be conducted (e.g., by setting up fences) in conservation priority areas of endemic plant species. In addition, alien plants such as Casuarina and Bischofia will be eliminated mainly in important regions for conservation, and sclerophyllous scrub and Schima mertensiana forest will be conserved.

A sanctuary to conserve important habitat for the wood-pigeon (Columba japonica nittens) has already been established in Higashidara by the Forestry Agency. Various protective measures are being employed, such as securing water holes and conducting patrols. Other additional measures to recover and conserve wood-pigeon breeding grounds and habitat will include a preliminary exclusion of feral cats, for example by setting up fences, and the removal of other alien species impacts.

Because the wood-pigeon moves among islands, including Hahajima, Anijima, and Ototojima, unified conservation measures will be conducted for habitats in all these areas with the aim of achieving steady habitat.

3. Habitat conservation for land snails

The southern region and Yokedaira are important habitat for land snails such as Mandarina chichijimana, which are valuable in ecological and evolutionary biology studies. In these regions, measures will focus on preventing the invasion of flatworm planaria and conserving the habitat of existing land snails.

5. Habitat conservation for endemic insects

Habitat conservation for endemic insects will be promoted by area exclusions of the green anole and cane toad. Re-colonization by insects flying from nearby islands such as Anijima is anticipated.

### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>(by the end of FY 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrub and Schima mertensiana forest</td>
<td>Elimination of feral goats</td>
<td>Continuation of elimination as a countermeasure against agricultural damage on Chichijima. [Ogasawara Village]</td>
<td>Initiate and continue elimination</td>
<td>Continue with the activities listed on the left. [Ogasawara Village]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of Ficus microcarpa, Leucaena, Psidium littorale, and other alien plants</td>
<td>Carrying out research on inhabitation status, and initiating studies of effective eradication procedures. [MOE, FA, TMG, Ogasawara Village]</td>
<td>With cooperation among agencies, initiate strategic elimination measures where necessary. [MOE, FA, TMG, Ogasawara Village]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Habitat conservation for wood-pigeon</td>
<td>Exclusion of feral cats</td>
<td>Estimating the distribution status of alien woody plants based on aerial photograph analysis. [FA]</td>
<td>Initiate area exclusion</td>
<td>Implement exclusion of cats focusing on the important southern region (the known breeding ground of the wood-pigeon and surrounding areas) and decrease feral cat density on Chichijima. [MOE]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td>Implementation of emergency captures of feral cats in cooperation with the Ogasawara Cat Liaison Committee (targeting all of Chichijima). [FA]</td>
<td>Continue exclusion</td>
<td>Set up sanctuaries in land snail habitats (e.g., Tatsumizaki, Toriyama, Yokedaira) and implement preventive measures against alien species invasions. [MOE]</td>
<td></td>
</tr>
<tr>
<td>3. Habitat conservation for land snails</td>
<td>Elimination of flatworm planaria</td>
<td>Carrying out trials of specific measures for area defense at important areas within the un-invaded region of Chichijima, and examining the effectiveness of measures. [MOE]</td>
<td>Continue area defense</td>
<td>(To be addressed on medium- and long-term bases)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Habitat conservation for endemic insects</td>
<td>Elimination of the green anole</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

### Legend

- **Gray**: Almost complete at present
- **Blue**: Planned to be completed by the end of FY 2012

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence
Information on the fences for feral cat and goat exclusion in the Higashidaira area

1. Goals
   Prevent the invasion of feral cats to protect the wood-pigeon.
   Prevent the invasion of feral goats to protect rare plants.

2. Location
   Fences were installed in the vicinity of the Higashidaira wood-pigeon sanctuary, established inside the national forest (along a road), toward the coastline. (The initial route was modified to detour around sclerophyllous scrub and endemic land snail habitat.)

3. Structure
   The fences are 2.5 m tall and extend 4.6 km in total.
   To exclude feral cats, a climb-proof structure will be fixed at the top of the fence. The fences are designed using a simple framework of posts installed in the ground without a foundation; once the island-wide eradication and measures against domestic cat and others are completed, these fences will be removed.

4. The course to be taken
   - Construction partially completed in FY 2009.
   - From FY 2009, elimination of feral goats and feral cats will be implemented both within and outside the fences.
   - Once the effectiveness of the fences in Higashidaira has been verified, fences will be installed in the central mountain region.

Reference
Additional information pertaining to feral goats on Chichijima

【Reference】 Additional information pertaining to feral goats on Chichijima

(1) Chichijima Island (Chichijima Islands)
Anijima Island (Chichijima Island Group)

Anijima has the largest area of sclerophyllous scrub among the Ogasawara Islands, as well as many endangered endemic plants and insects. Therefore, it is a high-priority island for the elimination of alien species such as feral goats and Casuarina. Necessary conservation measures will be urgently promoted hereafter.

- **Casuarina** and *Pinus lutchuensis* are expanding in distribution and thereby stressing endemic plants within the sclerophyllous scrub and rocky desert vegetation; these invasive alien species are also stressing the habitat of *Cicindela bonina* by their leaf litter. Therefore, the MOE and FA are currently conducting area exclusion* measures on the gently sloped land of the plateau.

- **Feral goats** have been eradicated by the TMG, and vegetation such as rocky desert vegetation and endemic plant species including *Callicarpa parvifolia*, *Crepidiastrum grandicolium*, and *Aristida cumingiana* are recovering as a result. It is also expected that seabirds will start breeding on the island again. On the other hand, since the grazing pressure of feral goats has been removed, plants such as *Leucaena* and *Lantana camara var. aculeata* have been increasing and invading the gently sloped land on the plateau.

- To address the above situation, area exclusion of alien plants such as Casuarina, *Pinus lutchuensis*, *Leucaena*, and *Lantana camara var. aculeata* on the gently sloped land of the plateau is targeted by FY 2012, based on monitoring (described below) of interspecific interactions and other information. As the soil seed bank of alien plants remains within the steeply sloped land on the seacoast, monitoring for new invasion and overgrowth of alien species and adaptive measures will be continued after area exclusions. With regard to *Leucaena* and *Lantana camara var. aculeata*, technical examinations of elimination methodologies will be conducted.

- The FA is analyzing models and surveys of the sclerophyllous scrub ecosystem on Anijima to determine the interspecific interactions on Ogasawara Islands and to predict the impacts of alien species elimination. Based on monitoring data, researchers will predict, evaluate, and analyze the recovery status of endemic plants and the status of invasion and overgrowth by new alien species at sites where alien species such as feral goat and Casuarina have been eliminated. The results obtained from these analyses will be utilized for the area exclusion mentioned above.

- **Black rats** have impacted the overall vegetation and species such land snails. To increase the effect of feral goat eradication, elimination of black rats will also be initiated by the MOE from FY 2009, with eradication targeted by FY 2012. As black rat elimination involves risks as well as benefits, monitoring will be implemented, and measures will be considered throughout the processes as necessary. In addition, because the black rat is an important food source for the common buzzard, the impact of black rat eradication on common buzzards will also be monitored.

- Although feral cats were not identified in the survey conducted by the MOE, and an extremely small number of (or no) feral cats are estimated to inhabit Anijima, monitoring to identify feral cats will continue and, if cats are found, exclusion measures will be implemented.

- The overgrowing colony of *Lantana camara var. aculeata* at Takinoura, the landing port of the island, is also the seed source of this alien plant within the island. Therefore, elimination is currently being implemented by volunteers, NPOs, and other parties. This elimination will continue through cooperation among related agencies.
## Anijima Island (Chichijima Island Group)

### Activity

1. **Conservation of sclerophyllous scrub**
   - Among alien animals, feral goats, which had been the main impact factor for sclerophyllous scrub vegetation, have nearly been eradicated. Now, eradication of the black rat targeting its vegetation is planned. Removal of impact factors, including the black rat, will be conducted and monitored. Appropriate conservation measures will also be carried out for the rocky desert vegetation intermingled within the sclerophyllous scrub and for the natural Schima mertensiana forest distributed in surrounding hollows and ravine bottoms.
   
   In addition, by eliminating invasive plants such as Casuarina, focusing on areas where suppressive pressure by alien species is anticipated, and maintaining rocky desert vegetation, the habitats of precious endemic animal and plant species, including Cicindela bonina, Crepidiastum grandicolum, and Calliandra paupila, will be conserved.

2. **Habitat conservation for land snails**
   - Anijima is an important habitat for many land snails, such as Mandarina anijimana, which are important for ecological and evolutionary biology studies. Elimination of the black rat, which is believed to cause grazing damage, is planned, targeting its eradication. However, the black rat is also a known food of common buzzards; thus, careful and adequate measures are being conducted under continued monitoring.

3. **Habitat conservation for wood-pigeon**
   - Anijima is one of the habitats of the wood-pigeon (Columba janthina nitens). Wood-pigeon habitat is being conserved by excluding feral cats, which are assumed to inhabit the wood-pigeon habitat in small numbers. In addition, because the wood-pigeon moves among islands such as Chichijima and Otojima, unified conservation measures are being conducted in these habitats with the goal of achieving steady habitation.

### Table: Conservation Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Short-term target after nomination</th>
<th>Description</th>
<th>(by the end of FY 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrubs</td>
<td>Elimination of feral goats</td>
<td>Completion of eradication</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td>Initiating elimination</td>
<td>Initiating elimination in FY 2009 based on the status of elimination efforts on Mukojima. [MOE]</td>
<td>Complete eradication</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Elimination of Casuarina and other alien plants</td>
<td>Completion and expansion of area exclusion</td>
<td>Implementation of monitoring following experimental elimination on the Anijima plateau, and Initiating new elimination experiments. [MOE]</td>
<td>Complete and expand area exclusion</td>
<td>Implement elimination with the aim of complete area exclusion within the gently sloped land on the plateau. [FA]</td>
</tr>
<tr>
<td></td>
<td>Elimination of Leucaena</td>
<td>Establishment of elimination methods</td>
<td>Implementation of experiments to establish effective technical elimination methods using chemicals. [MOE]</td>
<td>Complete exclusion area exclusion</td>
<td>Initiate elimination in FY 2010, with the aim of complete area exclusion within the gently sloped land of the plateau by FY 2012. [FA]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiating a survey to determine the existing condition (on the plateau)</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Estimation of Lantana camara var. aculeata</td>
<td>Establishment of elimination methods</td>
<td>Implementation of experiments to establish effective technical methodologies using chemicals. [MOE]</td>
<td>Complete exclusion area exclusion</td>
<td>From FY 2010 within the gently sloped land of the plateau, implement elimination of Casuarina and other plants as well as experimental elimination in a small area with monitoring thereafter. [FA]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiating a survey to determine the existing condition on the plateau</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td></td>
<td>With cooperation among volunteers, NPOs, and other agencies, implement elimination in Takinoura.</td>
</tr>
</tbody>
</table>

2. **Habitat conservation for land snails**
   - Elimination of black rats | Initiating elimination | * Same as above | Complete eradication | * Same as above |

3. **Habitat conservation for wood-pigeon**
   - Elimination of black rats | Initiating elimination | * Same as above | Complete eradication | * Same as above |

Exclusion of feral cats | Completion of exclusion | Carrying out exclusion by FY 2009 on the basis of research on inhabitation status. [MOE] | - | - |

*Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

*(Gray) Almost complete at present  *(Blue) Planned to be completed by the end of FY 2012
(2) Anijima Island (Chichijima Island Group)

【Reference】 Vegetation of Anijima and related information

01 Machilus boninensis-Ardisietum sieboldii, typical subass., typical variant
14 Distylium-Pouterietum dubiae
15 Wikstroemia-Pouterietum dubiae
16 Machilus kobu-Schimetum mertensianae, Geniostoma glabrum subass., Distylium lepidotum variant
17 Hernandia nymphaeifolia -Terminalia catappa community
18 Liyistonia chinensis var. boninensis-Pandanus boninensis
22 Terminalia catappa community
25 Pandanus boninensis community
34 Lantana camara community
35 Casuarina equisetifolia forest (includ. secondary forest)
36 Evergreen broadleaved planted forest
40 Plant communities in rocky desert
42 Miscanthetum condensati var. boninensis (includ. Pennisetum sordidum community, typical under units etc.)
45 Vitex rotundifolia community
62 Paspalum orbiculare-Paspalum dilatatum community (includ. Pennisetum sordidum community, Paspalum orbiculare under units)
63 Zoysia tenuifolia community (secondary grassland)
72 Natural bareland
On Ototojima, the only island inhabited by the five endemic dragonflies of Ogasawara, the MOE has nearly achieved eradication of the bullfrog, followed by that of the feral pig. Therefore, the main alien-animal impact factors on this island have been removed. From now on, together with actions to secure and manage lentic environments to mitigate risks such as drought, conservation of the forest environment (mentioned below) will be carried out.

- Elimination of feral goats has also been started on Ototojima by the TMG, following the completion of feral goat eradication on Anijima. In the northern part of Ototojima, where a pure population of *Morus boninensis* is distributed (northwestern part of Mt. Hirone), soil erosion caused by feral goats has been observed. Therefore, strategic and adaptive elimination measures will be developed based on the feral goat exclusion plan, with the goal of rapid reduction in goat numbers. The aim is to reduce the goat population to a low density by FY 2010, with complete eradication aimed for by FY 2011. After that, measures to prevent soil erosion will be considered and implemented, as will monitoring for the invasion of *Morus australis*, which presents the potential risk of cross-fertilization.

- Black rats impact both flora and fauna, including endemic land snails. On Ototojima, the MOE initiated black rat elimination in FY 2009, with the aim of complete eradication by FY 2012. Because rat elimination has potential risks as well, the effects will be monitored, and measures will be considered as necessary. In addition, as the black rat is an important food source for the common buzzard, the impact of black rat eradication on common buzzards will be monitored.

- Feral cats have a predation impact on birds including the wood-pigeon. Among the Chichijima Island Group, Ototojima is the second most important island for wood-pigeon habitat, following Chichijima. Feral cats have been found on the island, and complete exclusion of feral cats is targeted by FY 2010.

- To recover *Schima mertensiana* vegetation and avoid stress on the habitats of woodland endemic insects and land snails, the MOE has already completed the eradication of *Bischofia* at the early stage of its invasion. For other alien plants such as *Casuarina*, *Morus australis*, *Ficus microcarpa*, and *Leucaena*, once their distributions are understood, elimination will be initiated through agency cooperation, prioritizing areas of conservation importance.
## Ototojima Island

### Island (Chichijima Island Group) Activity

**Ototojima Island**

1. **Conservation of Schima mertensiana forests**
   - Highly natural forests of Schima mertensiana occupy a large area of Ototojima, particularly in the central part of the island. Considering already established interspecific relationships, activities such as exclusion of alien species will continue to be conducted in an adaptive manner. Extensive invasion by Bischofia was a concern. However, this species has been eradicated at the early stage of its invasion. Now, feral goat, black rat, and Casuarina will be eliminated. However, as the black rat is a food source of the common buzzard, a careful approach is required. In addition, conservation of the forests protects the habitats of other endemic species such as Morus boninensis.

2. **Habitat conservation for endemic insects including five endemic species of dragonfly**
   - Bullfrogs and feral pigs, which likely impacted endemic dragonfly species, have been eradicated. Endemic insect habitats will be conserved by removing alien impacts while conducting ongoing monitoring. Additional measures include preventing desiccation of waterside areas that serve as dragonfly breeding grounds.

3. **Habitat conservation for wood-pigeon**
   - Ototojima includes wood-pigeon (Columba janthina nitens) habitat, which is being conserved by removing the impact of feral cats. Because wood pigeons move to other islands such as Chichijima and Anijima, unified conservation measures will be implemented to attain steady habitation.

### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Conservation of Schima mertensiana forests</strong></td>
<td>Elimination of Bischofia</td>
<td>Completion of eradication</td>
<td>Achieving eradication by chemical injection at the initial stage of invasion. Implementation of monitoring. [TMG]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Elimination of feral goats</td>
<td>Continuation of elimination</td>
<td>Implementation of elimination, targeting eradication from Ototojima. [TMG]</td>
<td>Complete eradication</td>
<td>Continue with the activities listed on the left. [TMG]</td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td>Initiating elimination</td>
<td>Initiating elimination in FY 2009 based on the implementation status of elimination on Mukojima... [MOE]</td>
<td>Complete eradication</td>
<td>Complete eradication on the island and also on its peripheral islands. [MOE]</td>
</tr>
<tr>
<td></td>
<td>Elimination of Casuarina, Leucaena, and other invasive alien plant species</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs. [FA] Implementation of monitoring surveys (e.g., of birds, insects, land snails, and plants) before conducting eradication. [FA]</td>
<td>Initiate area exclusion</td>
<td>With cooperation among agencies, initiate elimination strategically where necessary. [MOE, FA, TMG, Ogasawara Village] Research the distribution status of alien species (e.g., Casuarina, Leucaena) in the national forest and analyze the effects of area exclusion based on the results of eliminating Leucaena and other alien species on Anijima and elsewhere. Initiate area exclusion beginning in FY 2010. [FA]</td>
</tr>
</tbody>
</table>

2. **Habitat conservation for endemic insects including five endemic species of dragonfly**
   - Elimination of bullfrogs | Completion of eradication | Achieving eradication. [MOE] | - | - |
   - Elimination of feral pigs | Completion of eradication | Achieving eradication. [MOE] Implementation of measures to recover vegetation, land snail fauna, and insect fauna. Implementing recovery projects for endangered insect species. [MOE] | - | - |
   - Recovery of lentic environments | Construction of lentic environments | Construction of lentic environments to recovery the site together with the implementation of monitoring of aquatic insects, such as dragonflies. [MOE] | Construction of lentic environments | Continue with the activities listed on the left. [MOE] |
   - Elimination of Casuarina and other alien plant species | Initiating a survey to determine the existing condition | Same as above | Initiate area exclusion | Same as above |

3. **Habitat conservation for wood-pigeon**
   - Elimination of black rats | Initiating eradication | * Same as above | Complete eradication | * Same as above |

*Correspond to "in the figure below"

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

*(Gray)* Almost complete at present  *(Blue)* Planned to be completed by the end of FY 2012
(3) Ototojima Island (Chichijima Island Group)

Legend:
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

Feral cat
- Exclusion [MOE]

Wood-pigeon
- Important habitat for wood-pigeon

Black rat
- Preying
- Competition
- Feeding

Bullfrog
- Preying

Habitat invasion

Important habitat for endemic dragonflies
- Indolestes boninensis
- Rhinocypha ogasawarenysis
- Hemicordulia ogasawarenysis
- Boninagron ezo
- Bonintheins insularis

Eradication [MOE]

Feral pig
- Preying
- Habitat invasion

Eradication [MOE]

Insects
- Land snails

Common buzzard
- Preying
- Feeding

Schrims mertensiana forest ecosystem
- Morus boninensis
- Other plants

Feral goat
- Feeding
- Habitat invasion

Habitat invasion

Morus boninensis
- Habitat invasion
- Area exclusion [MOE, FA, TMG, Ogasawara Village]

Construction of lentic environments [MOE]

Legend:
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

High conservation priority endemic and threatened species

Other endemic and threatened species

Native species etc.

Invasive alien species

Invasive alien species to be addressed in the short-term

Other plants

Interspecific relations

Interspecific relations that influence
04 Machilus kobu-Schimetum mertensianae, Geniostoma glabrum subass, typical variant / Freycinetia boninensis variant
14 Distylio-Pouterietum dubiae
15 Wikstroemio-Pouterietum dubiae
18 Liyistonia chinensis var. boninensis-Pandanus boninensis
22 Terminalia catappa community
24 Morus boninensis community
25 Pandanus boninensis community
33 Pinus lutchuensis community
35 Casuarina equisetifolia forest (includ. secondary forest)
36 Evergreen broadleaved planted forest
40 Plant communities in rocky desert
42 Miscanthetum condensati var. boninensis (includ. Pennisetum sordidum community, typical under units etc.)
45 Vitex rotundifolia community
54 Imperata cylindrica var. major community (includ. Paspalum conjugatum comm.)
62 Paspalum orbiculare-Paspalum dilatatum community (include. Pennisetum sordidum community, Paspalum orbiculare under units)
63 Zoysia tenuifolia community (secondary grassland)
72 Natural bareland
**Nishijima Island**

### Activity

1. **Ecosystem management considering endemic species**

   **Description**
   - Endemic species such as land snails still inhabit Nishijima. For conservation of endemic species, elimination of alien species such as black rats, Casuarina species, and Leucaena will be conducted in an adaptive manner considering the already developed interspecific relationships on the island.

   In addition, conservation of this island will protect the habitats of endemic plants such as *Cirsium boninense*.

   **Envisaged achievement**
   - (by the end of FY 2009)
   - (by the end of FY 2012)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement**</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>(by the end of FY 2009)</th>
<th>(by the end of FY 2012)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ecosystem management considering endemic species</td>
<td>Elimination of black rats</td>
<td>Initiation of elimination of black rats</td>
<td>Rat poison being set as an elimination effort. [FFPRI]</td>
<td>Complete the eradication</td>
<td></td>
<td>Complete eradication. [MOE]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of Casuarina and Leucaena</td>
<td>Initiation of a survey to determine the existing condition</td>
<td>Using aerial photographs to attempt to determine the distribution of alien woody plants. [FA] Conducting a survey of Casuarina distribution in the central part of the island. [FA]</td>
<td>Initiate elimination</td>
<td></td>
<td>With cooperation among agencies, initiate strategic elimination where necessary. [MOE, FA, TMG, Ogasawara Village]</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>For national forest areas, establish maintenance arrangements with NPOs and other groups to promote the elimination of Casuarina and other alien species starting in FY 2010. [NPO, FA]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correspond to [in the figure below]*

**Short-term actions**

- On Nishijima, eradication of feral goats, which had heavy impacts on the vegetation, has been achieved.

- It is important to recover the native vegetation, which will also benefit insect conservation. Therefore, in addition to ongoing efforts to eliminate black rats with the goal of complete eradication, elimination of alien plants such as *Casuarina* and *Leucaena* will be initiated.

- On the other hand, some land snails have become adapted to *Casuarina*. Therefore, care must be taken when conducting elimination of alien plants. For example, monitoring should be conducted, and activities such as clear-cutting should be avoided.

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009: (Gray): Almost complete at present (Blue): Planned to be completed by the end of FY 2012

Some of the listed measures may not be implemented due to weather conditions etc.

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Reference:** Vegetation of Nishijima Island

- 35 *Casuarina equisetifolia* forest (includ. secondary forest)
- 54 *Imperata cylindrica* var. major community (includ. *Paspalum conjugatum* comm.)
- 62 *Paspalum orbiculare*-*Paspalum dilatatum* community (include. *Pennisetum sordidum* community, *Paspalum orbiculare* under units)
- 63 *Zoysia tenuifolia* community (secondary grassland)
- 72 Natural bareland
Higashijima Island

**Activity**

1. Conservation of seabird breeding grounds

To conserve the breeding grounds of seabirds such as Audubon's shearwater (*Puffinus lherminieri bannermani*), the wedge-tailed shearwater (*Puffinus pacificus*), and Bulwer's petrel (*Bulweria bulwerii*), the black rat, which preyed on seabirds, was eliminated following eradication of the black rat. Monitoring will be conducted.

2. Ecosystem management considering endemic species

For conservation of endemic species still inhabiting the island, measures such as elimination of alien plants will be conducted in an adaptive manner considering the already established interspecific relationships. Conservation of the island also protects the habitats and colonies of endemic plants such as *Lobelia boninensis* and *Ixeris longirostra*.

### Short-term actions

- On Higashijima, eradication of black rats, which were impacting seabirds and vegetation, has been completed.
- The distributions of alien plants such as *Casuarina* and *Leucaena* will be determined and implementation of measures including experimental elimination aimed at achieving area exclusions will be discussed.

### Legend

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Reference:** Vegetation of Higashijima Island

1. *Livistonia chinensis var. boninensis-Pandanus boninensis*
2. *Pandanus boninensis* community
3. *Leucaena leucocephala* community
4. *Casuarina equisetifolia* forest (includ. secondary forest)
5. *Miscanthetum condensati var. boninensis* (includ. *Pennisetum sordidum* community, typical under units etc.)
6. *Vitex rotundifolia* community
7. *Agave americana* community / *Agave sisalana* community
8. *Zoysia tenuifolia* community (secondary grassland)
9. Weed communities of the open area (*Bidens pilosa* var. radiata community etc.)
10. *Natural bareland*
Minamijima Island

1. Conservation of seabird breeding grounds

- To conserve the breeding grounds of seabirds such as the wedge-tailed shearwater (Puffinus pacificus) and Bulwer’s petrel (Bulweria bulwerii) that breed on Minamijima, appropriate conservation will be promoted by continued monitoring. Elimination of alien species such as the black rat, which creates predation pressure on seabirds, will be conducted. Compliance with the current utilization rules will also be enforced to avoid impacts from human use.

- Minamijima Island

2. Ecosystem management considering endemic species

- For conservation of endemic species still inhabiting the island, elimination of alien plants such as Cenchrus echinatus will be continued in an adaptive manner, considering already established interspecific relations. Approaches such as limiting utilization will also be enforced. Conservation of the island also protects the habitats of endemic and endangered plants such as Lobelia boninensis, Ixeris longirostra, and Lycium sandwicense.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement* (by the end of FY 2009)</th>
<th>Short-term target after nomination (by the end of FY 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of Cenchrus echinatus and other alien plants</td>
<td>Continuation of elimination</td>
<td>Implementation of elimination of highly invasive alien plants on Minamijima. [TMG, FA, Ogasawara Village, NPO]</td>
</tr>
<tr>
<td>2. Ecosystem management considering endemic species</td>
<td>Elimination of black rats</td>
<td>Complete eradication</td>
<td>Determination of the distribution status of alien woody plants by using aerial photographs. [FA]</td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

■ Short-term actions
- Implement black rat eradication to protect important seabird habitats on Minamijima.
- Continue to eliminate alien plants such as Cenchrus echinatus in an adaptive manner under ongoing monitoring.

Legend:
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

Reference: Vegetation of Minamijima Island

- Scaevola sericea community
- Pandanus boninensis community
- Vitex rotundifolia community
- Sporobolus virginicus community
- Limonium wrightii community (incl. Lycidetum griseolae)
- Zoysia tenuifolia community (natural grassland)
- Myoporetum boninensis
- Weed communities of the open area (Bidens pilosa var. radiata community etc.)
- Natural bareland
- Open water
Hahajima Island

- Bischofia is distributed throughout Sekimon and has large impacts on the sustainability of the subtropical rainforest and Aristus sieboldi natural forest distributed widely in the north-central part of Hahajima. Based on the land ownership structure, the FA, MOE, and other parties are sharing in the work of eliminating Bischofia. The FA is conducting Bischofia exclusion in the entire areas of Sekimon and Nishidai, and the MOE is expanding its exclusion area from the northern part of the island (Higashidai and Nishidai) toward the south. The elimination will be continued in cooperation between the FA and MOE. Adaptive management will be carried out, while monitoring the impacts of elimination and the recovery of endemic vegetation. To achieve eradication of Bischofia, which is the long-term target, actions such as extracting young trees will also be continued in parallel.

- Although endemic insects have been greatly impacted by green anole and cane toad predation pressures, endangered insects such as lycaenid butterfly (Celastrina ogasawaraensis), Parnara ogasawarenis, and Ogasawarazo lineatus still remain on the island. The MOE has set up fences around nature restoration areas to exclude green anole in Shin-Yuhigaoka and Minamizaki (fences in Minamizaki are also designed to exclude feral cat). Extremely low alien species densities having no damaging impact on the insect ecosystem was achieved in FY 2009. Hereafter, management will continue to keep the density low. Vegetation and ecosystem management such as elimination of alien plants will also be conducted. Within sites and areas important for conservation, traps will be set up intensively as an urgent measure to reduce the population density of green anole. In addition, elimination of alien species such as Bischofia will be implemented to conserve Machilus kobu and Callicarpia subphylleces, which are the food trees for Celastrina ogasawaraensis.

- By setting up fences around lentic environments that serve as breeding grounds of the cane toad and thereby preventing its breeding, habitat will be conserved for endemic dragonflies and land snails, as well as Chlaenius ikedai, in Minamizaki. Fences have already been set up at Minamizaki Hasuike Pond by the MOE. Considering the importance and urgency of conservation of target species, the fence installation work will continue to be carried out to prevent cane toad breeding; a cane toad capture-and-kill program will also be promoted. The target date for certain parts of the project is FY 2012.

- Hahajima is a habitat for the wood pigeon, and the area around Sekimon, Mt Chibusa, and Kitako is especially important. Sekimon is also an important habitat for the Bonin honeyeater. In addition, Minamizaki is an important habitat for Carduelis sinica kitxitiz and seabirds. To achieve habitat conservation for these birds, measures against feral cats are necessary.

- On Minamizaki, although area exclusion of feral cats has already been completed by a local NPO, from the viewpoint of conserving the habitats of Carduelis sinica kitxitiz and seabirds, the MOE is considering the establishment and implantation of a large-scale exclusion zone including areas surrounding the existing area exclusion zone. In addition, based on the implementation plan established by the Ogasawara Cat Liaison Committee, capturing activities will be continuously implemented to achieve island-wide eradication, including a project to capture feral cats in the former residential area at Kitako Port and in the surrounding mountain region.

- On Chichijima and Hahajima, approaches to cut off a source of new feral cats through strict implementation of appropriate domestic cat-keeping measures are also being implemented by the Ogasawara Cat Liaison Committee, Tokyo Veterinary Medical Association, and other related parties. Therefore, the measures against feral cats will be conducted in conjunction with measures for domestic cats.

- As Hahajima is an important habitat for endemic land snails, the MOE will determine the inhabitation of endemic land snails on Hahajima, establish an Individual Project Review Committee, and discuss conservation policies for the land snails. Planaria, which are assumed to have a great impact on endemic land snails, have not yet invaded Hahajima. Therefore, after obtaining the understanding and cooperation of Hahajima islanders, measures to prevent the introduction from Chichijima will be enforced. When conducting elimination projects for other alien species, workers will enter important habitat of endemic land snails, such as the entire Sekimon and Minamizaki areas. Therefore, such work should be designed to minimize impacts (e.g., such as soil movement) on endemic land snails. Dispersion of snail-eating planaria attached to equipment and clothing should be strictly prevented.

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<tbody>
<tr>
<td>Tentative list</td>
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<td></td>
<td></td>
<td>Medium- and long-term actions</td>
</tr>
<tr>
<td>Bischofia (northern part and Sekimon)</td>
<td>Continue &amp; expand</td>
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<tr>
<td>Green anole (Shin-Yuhigaoka and Minamizaki)</td>
<td>Continue</td>
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<tr>
<td>Green anole (low-density management)</td>
<td>Continue</td>
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<tr>
<td>Cane toad (Minamizaki Hasuike Pond)</td>
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<tr>
<td>Cane toad (breeding inhibition)</td>
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<tr>
<td>Feral cat (Minamizaki : area exclusion)</td>
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<tr>
<td>Feral cat (Minamizaki : continue exclusion, consider large-scale exclusion zone)</td>
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<tr>
<td>Feral cat (Hahajima island-wide: surrounding exclusion to low density exclusion)</td>
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</table>
### Activity

<table>
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<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of subtropical rainforest and <em>Ardisia sieboldii</em> forest</td>
<td>Elimination of <em>Bischofia</em></td>
<td>Creation of medium- and long-term plans</td>
<td>Continue elimination</td>
<td>Continue the activities listed on the left. (FA)</td>
</tr>
<tr>
<td></td>
<td>Elimination of <em>Ficus microcarpa</em></td>
<td>Initiating area exclusion</td>
<td>Initiating area exclusion</td>
<td>With cooperation among agencies, initiate elimination strategically where necessary. (MOE, FA, TMG, Ogasawara Village)</td>
</tr>
<tr>
<td>2. Habitat conservation for endemic insects including <em>Celastrina ogasawaraensis</em></td>
<td>Elimination of the green anole</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs. (FA)</td>
<td>Set up new exclusion areas (areas as yet undecided). (MOE)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determining the distribution status of alien woody plants</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Set up new nature restoration areas (areas as yet undecided). (MOE)</td>
<td></td>
</tr>
<tr>
<td>3. Habitat conservation for <em>Columba janthina nitens</em></td>
<td>Exclusion of feral cats</td>
<td>Initiating point exclusions at the breeding grounds of endangered insects</td>
<td>At the breeding ground of <em>Celastrina ogasawaraensis</em>, continue point exclusion during the breeding season (area as yet undecided). (MOE)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclusion of black rats</td>
<td>Determining the inhabitability status of endemic land snails on Hahajima, establishing the Individual Project Review Committee, and discussing conservation policies for land snails. (MOE)</td>
<td>(To be addressed on medium- and long-term bases) (Coordinating with the schedule for island-wide exclusion, continue discussion of conservation measures)</td>
<td></td>
</tr>
<tr>
<td>4. Habitat conservation for land snails</td>
<td>Discussing conservation policies for endemic land snails</td>
<td>Based on outcomes of conservation policies found by the Review Committee, implement specific measures as necessary. (MOE)</td>
<td>(To be addressed on medium- and long-term bases)</td>
<td></td>
</tr>
</tbody>
</table>

*Correspond to in the figure below

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.
Island (region)  | (Hahajima Island Group)  | Activity
---|---|---

### Hahajima Island (North-Central Region)

1. **Conservation of Ardisia sieboldii forest**
   - Activities such as exclusion of alien species will continue in an adaptive manner considering the already established interspecific relationships in the following areas: subtropical rainforest covering the entire area of Sekimon, where Hahajima’s original vegetation is still well preserved; the Ardisia sieboldii forest, which occupies a large area and is widely distributed in the north-central part of the island; and the Schima mertensiana forest, which covers a wide area.
   - Among these activities, minimizing the impact of Bischofia, the major impact factor, is particularly important. Through cooperation among related agencies, Bischofia elimination is being strategically carried out.
   - In addition, conservation of the island protects the habitats of endangered and endemic plants, including *Piper postelsianum*, *Celastrina centinarium*, *Morus boninensis*, *Hymenopetalum cardiophyllum*, *Dendrocacalia crepidifolia*, and *Calathea hoshii*, and animals, such as endemic land snails.

2. **Habitat conservation for endemic insects including Celastrina ogasawaraensis**
   - Although the green anole has impacted the endemic insects of Hahajima, precious endemic insects such as *Celastrina ogasawaraensis*, *Pamara ogasawaraensis*, and *Rhynochoptera ogasawaraensis* still inhabit the island. Area exclusions of the green anole, as well as of the cane toad, have already been carried out. Conservation measures for the food plants of these insects have also been conducted. As these activities continue and expand, the existing habitat for endemic insects on the island will be conserved.

3. **Habitat conservation for wood-pigeon**
   - In the Sekimon region, an important habitat for the wood-pigeon (*Columba japonica nitens*), no major impact by feral cats has been observed to date. However, because wood-pigeons move between the Hahajima and Chichijima island groups, feral cats will be removed to achieve steady wood-pigeon habitat within the Ogasawara Islands as a whole.

4. **Habitat conservation for land snails**
   - On Hahajima, the entire southern area around Minamizaki, the ridge area including the Sekimon region, and the western coastal area are important habitat for land snails. By removing the impacts of alien species such as black rats and by continuing to conduct monitoring, habitat for the characteristic land snails will be conserved.

#### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Conservation of Ardisia sieboldii forest</strong></td>
<td>Elimination of Bischofia</td>
<td>Creation of medium- and long-term plans</td>
<td>Implementation of elimination according to the created medium- and long-term plans [e.g., “Removal plan of the alien plant (Bischofia)”] targeting area exclusion in the Sekimon region of Hahajima. [FA]</td>
<td>Continue elimination</td>
<td>Continue with the activities listed on the left. [FA]</td>
</tr>
<tr>
<td></td>
<td>Elimination of <em>Ardisia sieboldii</em></td>
<td>Initiating area exclusions</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td></td>
<td>By continuing the activities listed on the left, eliminate from private land in Nishidai and Koromodate; initiate elimination in the Koshinzuka region. [MOE]</td>
</tr>
<tr>
<td></td>
<td><strong>2. Habitat conservation for endemic insects including Celastrina ogasawaraensis</strong></td>
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<tr>
<td></td>
<td>Elimination of the green anole</td>
<td>Completion of area exclusion</td>
<td>Achieving extremely low density of green anoles having almost no negative impact on the insect ecosystem by FY 2009 within the nature restoration area set up in Shin-Yuhigaoka and Minamizaki on Hahajima. In addition, consideration of establishing new nature restoration areas. [MOE]</td>
<td>Set up new exclusion area</td>
<td>Set up new nature restoration area (area undecided) [MOE]</td>
</tr>
<tr>
<td></td>
<td>Elimination of the black rats</td>
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<td></td>
<td>Continue elimination of juvenile trees and other measures listed on the left. [FA]</td>
<td>Continue with the activities listed on the left. [FA]</td>
</tr>
<tr>
<td></td>
<td><strong>3. Habitat conservation for wood-pigeon</strong></td>
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<tr>
<td></td>
<td>Exclusion of feral cats</td>
<td></td>
<td>At breeding grounds of endangered insects</td>
<td>Continue monitoring</td>
<td>Continue the activities listed on the left. [MOE, Ogasawara-Shijimi Society]</td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
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<td>Planting of food trees</td>
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<td><strong>4. Habitat conservation for land snails</strong></td>
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<tr>
<td></td>
<td>Discussion of conservation policies for endemic land snails</td>
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</tbody>
</table>
| *Correspond to [in the figure below](#) | *Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

*Correspond to [in the figure below](#)

(24)
In the Minamizaki region, which tends to be a relatively dry part of Hahajima, sclerophyllous scrub typical of the Hahajima Island Group is found, similar to on many of the peripheral islands of Hahajima. To conserve existing endemic species such as land snails, considering already established interspecific relationships, alien species such as *Casuarina* will continue to be eliminated.

Although the green anole has impacted the endemic insects of Hahajima, precious endemic insects such as *Celastrina ogasawaraensis*, and *Rhinclymenus ogasawarenasis* still inhabit the island. Area exclusions of the green anole, as well as of the cane toad, have already been carried out. Conservation measures for the food plants of these insects have also been conducted. As these activities continue and expand, the existing habitat for endemic insects on the island will be conserved.

<table>
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<tr>
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<th>Envisaged achievement*</th>
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<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of <em>Casuarina</em> and <em>Leucaena</em></td>
<td>Initiate area exclusion</td>
<td>Implementation of <em>Casuarina</em> elimination at Minamizaki on Hahajima, targeting area exclusion in FY 2007–2008. Elimination of <em>Leucaena</em> at the site where elimination of <em>Casuarina</em> was carried out in FY 2007 as <em>Leucaena</em> has invaded the site. Implementation of monitoring on the site.</td>
<td>Continue monitoring after the elimination</td>
<td>Continue monitoring the invasion status of alien species, such as <em>Casuarina</em>, in excluded areas. (Minamizaki region) [FA]</td>
</tr>
<tr>
<td>2. Habitat conservation for endemic insects including <em>Celastrina ogasawarenasis</em></td>
<td>Elimination of green anole</td>
<td>Complete area exclusion</td>
<td>Achieving reduction of green anoles to an extremely low density having almost no negative impact on the insect ecosystem by FY 2009 within the nature restoration areas established in Shin-Yurigaoka and Minamizaki on Hahajima. In addition, consideration of establishing new nature restoration areas.</td>
<td>Set up new exclusion area</td>
<td>Set up new nature restoration areas (area as yet undecided). [MOE]</td>
</tr>
<tr>
<td></td>
<td>Elimination of cane toad</td>
<td>Complete area exclusion</td>
<td>Implementation of capturing and exclusion within the nature restoration area set up in Shin-Yurigaoka and Minamizaki in Hahajima. In addition, considering setting new nature restoration areas.</td>
<td>Complete area exclusion</td>
<td>Almost complete area exclusion (Minamizaki Hasukie Pond area). [MOE]</td>
</tr>
<tr>
<td></td>
<td>Monitoring of <em>Celastrina ogasawarenasis</em> habitat</td>
<td>Continue monitoring</td>
<td>Implementation of conservation and breeding measures for <em>Celastrina ogasawarenasis</em> and other endemic species, as well as continuing to monitor ecosystem recovery focusing on endemic insects.</td>
<td>Continue monitoring</td>
<td>Continue with the activities listed on the left. [MOE, Ogasawara-Shijimi Society]</td>
</tr>
<tr>
<td>3. Habitat conservation for <em>Carduelis sinica kittlitzi</em> and seabirds</td>
<td>Exclusion of feral cats</td>
<td>Complete area exclusion and expand area exclusion</td>
<td>Consideration of setting up a large-scale exclusion zone at Minamizaki. (an exclusion area has already been established at the point of Minamizaki and the exclusion has been completed).</td>
<td>(To be addressed on medium- and long-term bases)</td>
<td>(To be addressed on medium- and long-term bases)</td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td></td>
<td></td>
<td></td>
<td>(Coordinating with the schedule for the island-wide exclusion, continue discussion of measures)</td>
</tr>
<tr>
<td>5. Habitat conservation for land snails</td>
<td>Discussing conservation policies for endemic land snails</td>
<td></td>
<td></td>
<td></td>
<td>Based on the outcomes of conservation policies found by the Review Project Review Committee, and discussing conservation policies for land snails.</td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Legend**
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Interspecific relations
- Interspecific relations that influence
**Additional information pertaining to Bischofia on Hahajima**

It has not been possible to obtain written permission from owners of some of the land within the Koromodate region; such land is distributed in a stepping-stone fashion. As it is difficult to identify the land boundaries on site, topographical boundaries were used to distinguish the lands where permission has not yet been obtained (the use of the topographic boundaries explains why the area is large).

**Legend**
- Bischofia invaded area
- FA project
- Project planned area
- Project implemented area
- MOE project
- Ownership unidentified area
- Permission not obtained etc.

**Progress of surveys related to Bischofia measures**

*Figure* Places in which elimination experiments were implemented (MOE)
Mukohjima Island

1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group
   - Sclerophyllous scrub typical of the Hahajima Island Group remains in good condition on Mukohjima. The impacts of alien species such as Casuarina will be removed, and conservation of scrub vegetation will be promoted in an adaptive manner considering the already established interspecific relationships.

2. Habitat conservation for endemic birds
   - Mukohjima is an important habitat for endemic birds such as Carduelis sinica kittlitzi and the Bonin honeyeater (Apalopteron familiare rhahasma). Habitat conservation will be promoted by excluding the impacts of alien species and by continued monitoring.

**Activity**

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>By the end of FY 2012</th>
</tr>
</thead>
</table>
| 1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group | Elimination of Casuarina and other alien plants | > Carrying out aerial photography. [FA]  
> Implementation of surveys and other studies on the inhabitation status of Carduelis sinica kittlitzi and considering the elimination of alien species. [FA]  
> Implementation of monitoring surveys (e.g., of birds, insects, land snails, and plants) before beginning elimination. [FA] | > Initiate area exclusion | |
| 2. Habitat conservation for endemic birds | Elimination of black rats | > Complete eradication | > Considering the status of elimination throughout the Chichijima Island Group, initiate elimination as needed. [MOE] | |

*Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Reference:** Vegetation of Mukojima Island
### Anejima Island (Hahajima Island Group)

#### Activity

1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group

Sclerophyllous scrub forest typical of the Hahajima Island Group is distributed on the plateau. This scrub forest will be conserved through activities such as removing the impacts of alien species such as Casuarina in an adaptive manner, considering the already established interspecific relationships. In addition, conservation of the forest protects the habitats of endemic plants such as *Juniperus taxifolia*, *Lobelia boninensis*, and *Euonymus boninensis*.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of Casuarina and other alien plants</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Determine the existing condition</td>
<td>Implement research on the distribution status of alien species (e.g., Casuarina and <em>Leucaena</em>). [FA]</td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td>Complete eradication</td>
<td>Based on the completion status of elimination in the Chichijima Island Group, initiate elimination. [MOE]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.*

#### Short-term actions

- Determine the present condition of alien plants such as *Casuarina* on Anejima. It is possible that *Carduelis sinica* *kittitzi* and endemic land snails have become dependent on *Casuarina*. Therefore, *Casuarina* elimination will consider and account for interspecific interactions based on scientific research and knowledge.
- Elimination of black rats, which compete with land birds such as *Carduelis sinica* *kittitzi* and also impact vegetation, will be implemented.

---

* Reference: Vegetation of Anejima Island

<table>
<thead>
<tr>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant conservation area</td>
</tr>
<tr>
<td>High conservation priority endemic and threatened species</td>
</tr>
<tr>
<td>Other endemic and threatened species</td>
</tr>
<tr>
<td>Native species etc.</td>
</tr>
<tr>
<td>Invasive alien species</td>
</tr>
<tr>
<td>Invasive alien species to be addressed in the short-term</td>
</tr>
<tr>
<td>Interspecific relations</td>
</tr>
<tr>
<td>Interspecific relations that influence</td>
</tr>
</tbody>
</table>

- 01 Machilino boninensis-Adrisetum sieboldi, typical subass., typical variant
- 15 Wikstroemio-Pouterietum dubiae
- 17 *Hernandia nymphaeifolia*-*Terminalia catappa* community
- 22 *Terminalia catappa* community
- 25 *Pandanus boninensis* community
- 33 *Pinus lutchuensis* community
- 35 *Casuarina equisetifolia* forest (incl. secondary forest)
- 36 Evergreen broadleaved planted forest
- 42 *Miscanthetum condensati var. boninensis* (incl. *Pennisetum sordidum* comm.)
- 46 *Sporobolus virginicus* community
- 55 *Miscanthus condensatus* community (incl. *Saccharum officinarum* comm.)
- 57 *Agave americana* community / *Agave sisalana* community
- 72 Natural bareland
Island (Hahajima Island Group)

**Imotojima Island**

1. **Conservation of sclerophyllous scrub typical of the Hahajima Island Group**
   - To conserve the sclerophyllous scrub typical of the Hahajima Island Group, which remains in good condition, the impacts of alien species such as Leucaena will be removed in an adaptive manner that considers already established interspecific relationships.
   - In addition, conservation of the forest protects the habitats of endemic plants such as *Crepidiastrum linguifolium*, *Crepidiastrum ameristophyllum*, and *Ajuga boninsimae*.

2. **Habitat conservation for endemic birds**
   - Imotojima is a major habitat for endemic birds such as *Carduelis sinica kittlitzi* and the Bonin honeyeater (*Apalopteron familiare hahasima*). Their habitats will be conserved by removing the impacts of alien species and by ongoing monitoring.

### Activity Table

<table>
<thead>
<tr>
<th>Island (Hahajima Island Group)</th>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imotojima Island</td>
<td></td>
<td>1.</td>
<td>Elimination of Leucaena and other alien plants</td>
<td>Carrying out aerial photography. [FA]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.</td>
<td>Elimination of black rats</td>
<td>Determine the existing condition</td>
</tr>
</tbody>
</table>

### Short-term actions

- **The existing condition of alien plants such as Leucaena will be determined on Imotojima.** Elimination will be initiated as necessary considering interspecific interactions and based on scientific research and knowledge.
- **Implement elimination of black rats, which compete with land birds such as *Carduelis sinica kittlitzi* and also impact vegetation.**

### Legend

- **Relevant conservation area**
- **High conservation priority endemic and threatened species**
- **Other endemic and threatened species**
- **Native species etc.**
- **Invasive alien species**
- **Invasive alien species to be addressed in the short-term**
- **Interspecific relations**
- **Interspecific relations that influence**

Reference: Vegetation of Imotojima Island
Sclerophyllous scrub typical of the Hahajima Island Group is distributed on the plateau of Meijima. The scrub forest is in good condition, and its conservation includes removing the impacts of alien species such as Leucaena in an adaptive manner considering the already established interspecific relationships. In addition, conservation of the forest protects the habitats of endemic plants such as *Juniperus taxifolia*, *Lobelia boninensis*, and *Crepidiastrum linguifolium*, and endemic insect fauna.

**Activity**

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination of Leucaena and other alien plants</td>
<td>Initiating a survey to determine the existing condition</td>
<td>(by the end of FY 2009)</td>
<td>Carrying out aerial photography. [FA]</td>
</tr>
<tr>
<td>Elimination of black rats</td>
<td></td>
<td>(by the end of FY 2012)</td>
<td>Implement research on the distribution status of alien species (e.g., Casuarina and Leucaena). [FA]</td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Reference:** Vegetation of Meijima Island
Hirashima Island

1. Ecosystem management considering endemic species

To conserve endemic species still inhabiting the island, the impacts of alien species will be removed in an adaptive manner considering already established interspecific relationships. This activity will be accompanied by ongoing monitoring.

**Activity**

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination of Bischofia</td>
<td>Completion of eradication</td>
<td>Elimination being completed and eradication achieved; approximately 20 individual plants were removed. [MOE]</td>
<td></td>
</tr>
<tr>
<td>Elimination of Casuarina and other alien plants</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td></td>
</tr>
<tr>
<td>Elimination of black rats and other alien animals</td>
<td>Determine existing condition</td>
<td>Implement research on the distribution status of alien species (e.g. Casuarina and Leucaena). [FA]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete eradication</td>
<td>Initiate elimination measures considering the completion status of elimination in the Chichijima Island Group. [MOE]</td>
<td></td>
</tr>
</tbody>
</table>

**Short-term actions**

- The existing condition of alien plants such as *Casuarina* will be determined on Hirashima. However, it is possible that endemic land snails have become dependent on *Casuarina*. Therefore, elimination will be initiated as necessary considering and making arrangements for already established interspecific interactions based on scientific research and knowledge.
- Elimination of black rats, which compete with land birds such as *Carduelis sinica kittlitzi* and also impact vegetation, will be implemented.

*Correspond to [in the figure below]*

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

Legend

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

Reference: Vegetation of Hirashima Island

- 15 Wikstroemia-Pouterietum dubiae
- 17 Hernandia nymphaeifolia - *Terminalia catappa* community
- 20 *Scaevola sereica* community
- 25 *Pandanus boninensis* community
- 35 *Casuarina equisetifolia* forest (incl. secondary forest)
- 36 Evergreen broadleaved planted forest
- 42 Miscanthetum condensati var. *boninensis* (incl. *Pennisetum sordidum* community, typical under units etc.)
- 72 Natural bareland
On Mukojima, ecosystem management of Ardisia sieboldii forest and other habitats will be carried out in an adaptive manner. Feral goats, a major impact factor, have been eradicated, and other alien species will also be eliminated, including black rats, Leucaena, and alien bamboo and dwarf bamboo species; these species are inhibiting factors for forest recovery.

Mukojima is an important habitat for endemic insect species of the Mukojima Island Group, such as Chlorophorus kusamai and Tamamushia vindel fujita (a Mukojima subspecies), both of which are forest insects. Therefore, by removing the impacts of alien species, insect habitat will be conserved.

On Mukojima, the following Albatross Protection and Breeding Plan Project, continuous activities have been carried out to create a new breeding ground for another species of albatross that formerly bred on the island. Toward the goal of steady breeding and habitation by the three albatross species, overgrowth by alien plants will be removed and the site will be conserved to serve as a persistent breeding ground.

**Activity**

1. **Ecosystem management of Ardisia sieboldii forest and other habitats**
   - Elimination of Leucaena
   - Elimination of alien bamboo and dwarf bamboo species
   - Elimination of Ficus microcarpa

2. **Habitat conservation for endemic insects**
   - Elimination of black rats

3. **Conservation and creation of breeding grounds for three albatross species**
   - Creation of new albatross breeding ground
   - Elimination of Lantana camara var. aculeata

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term

**Flow of short-term approaches**

- On Mukojima, eradication of feral goats, which were heavily impacting the vegetation, has already been completed.
- Elimination of black rats was begun in FY 2008 by the MOE, with the aim of eradication by FY 2012. As there are risks, such as overgrowth by alien plant species, as well as positive effects associated with black rat elimination, monitoring will be implemented, and measures will be considered as necessary.
- Great change in vegetation, including alien species, is anticipated in the ongoing elimination of Leucaena alien bamboo and dwarf bamboo species, and Ficus microcarpa; FY 2012, other alien plants will also be managed adaptively while monitoring is carried out.

**Correspond to**

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Gray** Alnost complete at present

**Blue** Planned to be completed by the end of FY 2012

**Flowchart**

- Feral goats
  - Feeding
  - Preying
  - Eradication [TMG]

- Black rat
  - Feeding
  - Removal

- Leucaena
  - Bamboo
  - Ficus microcarpa

- Ardisia sieboldi
  - forest
  - Important breeding ground

- Syzygium oleyiferfolium
  - Other plants

- Tamamushia vindel fujita
  - Mukojima subsp.

- Chlorophorus kusamai
  - Boninagrion ezoin
  - Other insects

**Legend**

- Habitat invasion
- Habitat provision
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term

**Survey [FA]**

**Important breeding ground for albatrosses**

- Short-tailed albatross
- Laysan albatross
- Black-footed albatross

**Other plants**
Reference: Vegetation of Mukojima and related information

Mukojima
New breeding ground for albatrosses

Torishima
Main breeding ground of albatrosses

TMG Leucaena cutting area

TMG Pleioblastus simonii cutting area

01 Machilus boninensis-Ardisietum sieboldii, typical subass., typical variant
22 Terminalia catappa community
25 Pandanus boninensis community
32 Leucaena leucocephala community
34 Lantana camara community
36 Evergreen broadleaved planted forest
45 Vitex rotundifolia community
58 Arundinaria simonii community / Pseudosasa japonica community etc.
62 Paspalum orbiculare-Paspalum dilatatum community
   (include. Pennisetum sordidum community, Paspalum orbiculare under units)
72 Natural bareland
**Kitanoshima Island**

**Activity**

1. Conservation of seabird breeding grounds

   Kitanoshima is an important breeding ground for seabirds such as the wedge-tailed shearwater (*Puffinus pacificus*) and Bulwer’s petrel (*Bulweria bulwerii*). Ongoing monitoring is being conducted to conserve their breeding grounds.

2. Ecosystem management considering endemic species.

   For conservation of endemic species currently inhabiting the island, suppressing factors will be excluded in an adaptive manner considering already established interspecific relationships.

---

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement* (by the end of FY 2009)</th>
<th>Short-term target after nomination (by the end of FY 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of alien plants and other related</td>
<td>Carry out aerial photography. [FA]</td>
<td>Determine existing condition</td>
</tr>
<tr>
<td></td>
<td>measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ecosystem management considering endemic</td>
<td>※Starting in FY 2009, work to determine the</td>
<td></td>
<td>Estimate the distribution status of alien woody plants</td>
</tr>
<tr>
<td>species</td>
<td>distribution status based on aerial photography</td>
<td></td>
<td>using aerial photographs. [FA]</td>
</tr>
<tr>
<td></td>
<td>will be carried out.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correspond to □ in the figure below
  *Gray*: Almost complete at present  
  *Blue*: Planned to be completed by the end of FY 2012

Short-term actions
- Starting in FY 2009, work to determine the distribution status of alien species based on aerial photography will be carried out.

---

Reference: Vegetation of Kitanoshima Island

- **44 Ipomoea pes-caprea community**
- **46 Sporobolus virginicus community**
- **55 Miscanthus condensatus community** (includ. *Saccharum officinarum* comm.)
- **72 Natural bareland**
Nakodojima is a breeding ground for seabirds such as the black-footed albatross (Phoebastria nigripes) and brown booby (Sula leucogaster). To conserve their breeding grounds, the impacts of alien species such as black rats, which cause predation damage, will be removed, and ongoing monitoring will be conducted.

Following feral goat eradication, measures to prevent soil erosion and to eliminate alien plants have been conducted to recover vegetation and conserve endemic species. These activities will continue in an adaptive manner considering the already established interspecific relationships.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>(by the end of FY 2009)</th>
<th>Short-term target after nomination</th>
<th>(by the end of FY 2012)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of Leucaena</td>
<td>&gt; Continuation of elimination</td>
<td>&gt; On Nakodojima, in addition to measures to prevent soil erosion, the elimination of alien species such as Leucaena being implemented. [TMG]</td>
<td>&gt; Complete eradication</td>
<td>&gt; Continue the activities listed on the left and implement adaptive management to prevent soil erosion and conserve the remaining forest. [TMG]</td>
<td></td>
</tr>
<tr>
<td>2. Ecosystem management considering endemic species</td>
<td>Elimination of alien bamboo and dwarf bamboo species.</td>
<td>&gt; Continuation of elimination</td>
<td>&gt; On Nakodojima, as well as measures to prevent soil erosion, elimination of alien bamboo and dwarf bamboo species being implemented. [TMG]</td>
<td>&gt; Complete eradication</td>
<td>&gt; Continue the activities listed on the left and implement adaptive management to prevent soil erosion and conserve the remaining forest. [TMG]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of black rats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Short-term actions**
- Since the completion of feral goat eradication on Nakodojima, measures including vegetation recovery have been taken.
- By FY 2012, eradication of *Leucaena* and alien bamboo and dwarf bamboo species, which have been spreading rapidly since the feral goat eradication, will be completed.
- Elimination of black rats, which prey on the offspring and eggs of the seabirds and also act as a suffocating factor for vegetation recovery, will be implemented.
Island (Mukojima Island Group)

**Yomejima Island**

**1. Conservation of seabird breeding grounds**
Yomejima is a breeding ground for seabirds such as the black-footed albatross (*Phoebastria nigripes*) and wedge-tailed shearwater (*Puffinus pacificus*). To conserve their breeding grounds, predation impacts by alien species such as black rats will be removed, and monitoring will continue.

**2. Ecosystem management considering endemic species**
To conserve endemic species that still inhabit the island, elimination of alien species such as black rats will be conducted considering the already established interspecific relationships, in an adaptive manner.

---

**Activity**

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Envisaged achievement* (by the end of FY 2009)</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>By the end of FY 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination of alien bamboo and dwarf bamboo species</td>
<td>initating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Initiate elimination</td>
<td>Complete eradication</td>
</tr>
<tr>
<td>Elimination of black rats</td>
<td></td>
<td>Estimate the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiate elimination of alien bamboo and dwarf bamboo species starting in FY 2010. [NPO, FA]</td>
<td></td>
<td>Conclude maintenance arrangements with NPOs and other groups and promote the elimination of alien bamboo and dwarf bamboo species starting in FY 2010. [NPO, FA]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correspond to ☐ in the figure below

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Reference:** Vegetation of Yomejima Island

- 25 *Pandanus boninensis* community
- 45 *Vitex rotundifolia* community
- 46 *Sporobolus virginicus* community
- 58 *Arundinaria simonii* community / *Pseudosasa japonica* community etc.
- 62 *Paspalum orbiculare-Paspalum dilatatum* community (include. *Pennisetum sordidum* community, *Paspalum orbiculare* under units)
- 65 Weed communities of the open area (*Bidens pilosa* var. *radiata* community etc.)
- 72 Natural bareland
**Nishinoshima Island**

1. Determine the existing condition

Nishinoshima is a young island. Thus, it is expected that vegetation succession has been progressing since land formation and will eventually create a complex ecosystem. The ecosystem will be maintained appropriately, with surveys conducted as necessary to determine the existing condition. By these surveys, successional changes in vegetation will be observed, and the status of possible alien species invasions will be monitored.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1. Determine the existing condition</td>
<td>(by the end of FY 2009)</td>
<td>Initiating a survey to determine the existing condition</td>
</tr>
<tr>
<td></td>
<td>(by the end of FY 2012)</td>
<td>Carrying out aerial photography. [FA]</td>
</tr>
</tbody>
</table>

*Correspond to [ ] in the figure below

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

---

**Pioneer vegetation**

(Portulaca oleracea-Eleusine indica community)

*Leave to survey the progress of vegetation succession*

---

**Important habitat for seabirds**

Seabirds

---

**Legend**

- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

---

Reference: Vegetation of Nishinoshima Island

- 51 Portulaca oleracea-Eleusine indica community
- 72 Natural bareland
- 73 Open water
## Kita-Iwoto Island (Volcano Islands and Others)

### Activity

1. **Determine the existing condition**
   - Kita-Iwoto features ecosystems characteristic of oceanic islands. Research to determine the existing condition will be continued.

2. **Conservation of seabird breeding grounds**
   - Seabirds are an extremely important characteristic of the oceanic island ecosystem found on Kita-Iwoto. Seabird habitat will be conserved by eliminating alien species such as black and brown rats and also by continued monitoring.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>(by the end of FY 2009)</th>
<th>Description</th>
<th>(by the end of FY 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine the existing condition</td>
<td>Implementation of a survey to determine the existing condition</td>
<td>Carrying out aerial photography</td>
<td>(To be addressed on medium- and long-term bases)</td>
<td></td>
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</tr>
<tr>
<td>2. Conservation of seabird breeding grounds</td>
<td>Elimination of rats</td>
<td></td>
<td>(To be addressed on medium- and long-term bases)</td>
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</tr>
</tbody>
</table>

*Correspond to in the figure below

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

---

**Legend**
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Important habitat for seabirds**

**Native vegetation**
- *e.g. Boninio griseae-Elaeocarpetum pachycarpae*
  - Cyathea tuyamae
  - Asplenium micantifrons

**Survey [FA]**

**Reference:** Vegetation of Kita-Iwoto Island

- 08 Boninio griseae-Elaeocarpetum pachycarpae
- 13 Hydrangea macrophylla f. normalis -Eurya japonica community
- 19 Hibiscus tiliaceus community
- 20 Scaevola sericea community
- 22 Terminalia catappa community
- 25 Pandanus boninensis community
- 33 Pinus lutchuensis community
- 36 Evergreen broadleaved planted forest
- 41 Nephrolepis cordifolia community
- 45 Vitex rotundifolia community
- 72 Natural bareland
**Minami-Iwoto Island**

**Activity 1: Determine the existing condition**

On Minami-Iwoto, an ecosystem characteristic of oceanic islands is maintained in a pristine condition. Any possibility of human influence on the environment will continue to be avoided as much as possible, and surveys will be conducted as necessary to determine the existing condition. These activities will help clarify the mechanisms of a pristine ecosystem of oceanic islands and guard against invasion by alien species, thereby maintaining the ecosystem of Minami-Iwoto.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Envisaged achievement*</th>
<th>Short-term target after nomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine the existing condition</td>
<td>Implementation of a survey to determine the existing condition</td>
<td>(To be addressed on medium- and long-term bases)</td>
</tr>
</tbody>
</table>

* Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.

**Legend**
- Relevant conservation area
- High conservation priority endemic and threatened species
- Other endemic and threatened species
- Native species etc.
- Invasive alien species
- Invasive alien species to be addressed in the short-term
- Interspecific relations
- Interspecific relations that influence

**Important habitat for seabirds**

- Bonin flying fox
- Native vegetation
  - Cenchrus echinatus
  - Cyathea tuyamae
  - Ficus nishimurae
  - Other plants
- Survey 【FA】

Reference: Vegetation of Minami-Iwoto Island

- 08 Bonino griseae-Elaeocarpetum pachycarpae
- 10 Machilus kobu - Diplazium virescens var. virescens community
- 11 Cyathetum mertensianae / Cyathetum tuyamae
- 12 Ficus boninsimae community etc.
- 13 Hydrangea macrophylla f. normalis - Eurya japonica community
- 20 Scaevola sericea community
- 25 Pandanus boninensis community
- 26 Planchnella obovata community
- 27 Melia azedarach community
- 43 Crossostephium chinense community (dwarf half-shrubs)
- 50 Miscanthus sinensis-Garnotia acutigluma
- 72 Natural bareland
<table>
<thead>
<tr>
<th>Island</th>
<th>Activity</th>
<th>Action Item</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>By the end of FY 2009</th>
<th>By the end of FY 2012</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chichijima Island Group</td>
<td>Conservation of sclerophyllous scrub and Schima humbertiana forest</td>
<td>Elimination of feral goats</td>
<td>Initiating area exclusion &gt; Initiating strategic measures with cooperation among agencies</td>
<td>Setting up and partially complete erection of fences to prevent the invasion of feral goats and feral cats in the Higashidaira area, targeting completion in 2010. Achievement of exclusion within the fences.</td>
<td>Complete area exclusion</td>
<td>Implement feral goat elimination within fenced areas.</td>
<td>Continue with the activities listed on the left. [Ogasawara Village]</td>
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<td></td>
<td>Elimination of Casuarina and Ficus var. aculeata</td>
<td>Initiating area exclusion</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Setting up protective nets around endangered plants growing in Higashidaira to protect them from feral goat grazing.</td>
<td>Continue protection</td>
<td>Continue with the activities listed on the left. [Ogasawara Village]</td>
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<td>Elimination of Bischella</td>
<td>Completion of area exclusion</td>
<td>Initiating area exclusion</td>
<td>Implementing of strategic measures to establish effective technical elimination methods using chemicals.</td>
<td>Continue expansion and area exclusion</td>
<td>Area exclusion planned to be completed by FY 2010. With mitigation treatment and other follow-up work thereafter. [Higashidaira area exclusion]</td>
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<td>Elimination of Psidium littorale</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs.</td>
<td>Continue area exclusion</td>
<td>Complete area exclusion</td>
<td>Complete feral cat exclusion within fenced areas.</td>
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<td>Elimination of Ficus microcarpa</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs.</td>
<td>Continue area exclusion</td>
<td>Complete area exclusion</td>
<td>Complete feral cat exclusion within fenced areas.</td>
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<td></td>
<td>Elimination of Leucocarya</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Estimating the distribution status of alien woody plants using aerial photographs.</td>
<td>Continue area exclusion</td>
<td>Complete area exclusion</td>
<td>Complete feral cat exclusion within fenced areas.</td>
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<td>Protection of endangered plants</td>
<td>Setting up protective nets</td>
<td>Initiating area exclusion &gt; Initiating strategic measures with cooperation among agencies</td>
<td>Setting up protective nets around endangered plants growing in Higashidaira to protect them from feral goat grazing.</td>
<td>Continue protection</td>
<td>Continue with the activities listed on the left. [Ogasawara Village]</td>
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<td>1. Conservation of sclerophyllous scrub and Schima humbertiana forest</td>
<td>Exclusion of feral cats</td>
<td>Initiating area exclusion</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
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<td></td>
<td>Elimination of flatworm planaria</td>
<td>Initiating area defense</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating new elimination experiments.</td>
<td>Continue area defense</td>
<td>Implement exclusion of feral cats focusing on the important southern region (the known breeding ground of the wood-pigeon and surrounding areas) and decrease feral cat density on Chichijima.</td>
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<td>4. Habitat conservation for the Bonin flying fox</td>
<td>Conservation measures for the Bonin flying fox</td>
<td>Implementation of protective measures</td>
<td>Active compatibility with measures for agricultural damage and raising awareness among the local people. Agency for Cultural Affairs, TMG, Ogasawara Village</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>Elimination of black rats</td>
<td>Eliminating the green anoles (prevent spread)</td>
<td>Initiating area exclusion</td>
<td>Implementing of strategic measures to establish effective technical elimination methods using chemicals.</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>6. Other measures</td>
<td>Elimination of the green anoles</td>
<td>Completing and expansion of area exclusion</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>Elimination of cane toad</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion (prevent spread)</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion (prevent spread)</td>
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<td>Exclusion of feral cats</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
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<td>Spread prevention of flatworm planaria</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Continue work to prevent spread and raise awareness</td>
<td>Complete area exclusion</td>
<td>Continue with the activities listed on the left. [Ogasawara Village]</td>
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<td>1. Conservation of sclerophyllous scrub and Schima humbertiana forest</td>
<td>Elimination of feral goats</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td></td>
<td>Elimination of Casuarina and other alien plants</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>Elimination of Leucocarya</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>2. Habitat conservation for land snails</td>
<td>Exclusion of feral cats</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
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<td>3. Habitat conservation for wood-pigeon</td>
<td>Exclusion of feral cats</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Initiating strategic measures with cooperation among agencies</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
<td>Complete area exclusion</td>
</tr>
<tr>
<td>Island</td>
<td>Activity</td>
<td>Action Item</td>
<td>Envisaged achievement</td>
<td>Description</td>
<td>Short-term target after nomination</td>
<td>[By the end of FY 2009]</td>
<td>Short-term target after nomination</td>
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<tr>
<td>Ototojima</td>
<td>1. Conservation of <em>Tschima mertensiana</em> forests</td>
<td>Elimination of Bischofia</td>
<td>Completion of eradication</td>
<td>&gt; Achieving eradication by chemical injection at the initial stage of invasion. Implementation of monitoring. [MOE]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of feral goats</td>
<td>Completion of eradication</td>
<td>&gt; Implementation of eradication targeting eradication from Ototojima. [MOE]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of black rats</td>
<td>Eliminating in FY 2009 based on the implementation status of eradication on Ototojima. [MOE]</td>
<td>&gt; Implementation of eradication targeting eradication from Ototojima. [MOE]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of Casuarina, Leucaena, and other invasive alien plant species</td>
<td>Initiating a survey to determine the existing condition</td>
<td>&gt; Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td></td>
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<td></td>
<td>&gt; Implementation of monitoring surveys (e.g., of birds, insects, land snails, and plants) before conducting elimination. [A]</td>
<td>Initiate area exclusion</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; With cooperation among agencies, strategically initiate eradication where necessary. [MOE, FA, TMG, Ogasawara Village]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; Research the distribution status of alien species (e.g., Casuarina, Leucaena) in the national forest and analyze the effects of area exclusion based on the results of eliminating Leucaena and other alien species on Anijima and elsewhere. Initiate area exclusion beginning in FY 2010. [FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td>Nishijima</td>
<td>1. Ecosystem management considering endemic species</td>
<td>Elimination of black rats</td>
<td>Completion of eradication</td>
<td>&gt; Achieving eradication</td>
<td>Complete eradication</td>
<td>[PP]</td>
<td>Complete eradication</td>
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<td>&gt; Rat poison being set out as an elimination effort. [PP]</td>
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<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td></td>
<td></td>
<td>Elimination of Casuarina and Leucaena</td>
<td>Initiating a survey to determine the existing condition</td>
<td>&gt; Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; Constructing of lentic environments to recover the site together with the implementation of monitoring of aquatic insects, such as dragonflies. [MOE]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; Based on the results from elimination of Leucaena and other alien species on islands such as Anijima, consider whether to implement experimental elimination with the aim of achieving area exclusions. [FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; For national forest areas, establish maintenance arrangements with NPOs and other groups to promote the elimination of Casuarina and other alien species starting in FY 2010. [PPO, FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; Conducting experimental elimination on Higashijima on a pilot basis. [MOE]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>Elimination of Casuarina and Leucaena</td>
<td>Initiating a survey to determine the existing condition</td>
<td>&gt; Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td>Complete eradication</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
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<td>&gt; Conducting a survey of Casuarina distribution in the central part of the island. [A]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; Based on the results from elimination of Leucaena and other alien species on islands such as Anijima, consider whether to implement experimental elimination with the aim of achieving area exclusions. [FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of Cenchrus echinatus and other alien plants</td>
<td>Continuation of elimination</td>
<td>&gt; Implementation of elimination of highly invasive alien plants on Minamijima. [NG, FA, Ogasawara Village, NPO]</td>
<td>Continue elimination</td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; Estimating the distribution status of alien woody plants using aerial photographs. [FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; For national forest areas, establish maintenance arrangements with NPOs and other groups to promote the elimination of Casuarina and other alien species starting in FY 2010. [PPO, FA]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of black rats</td>
<td>Conclusion of eradication</td>
<td>&gt; Achieving eradication</td>
<td>Complete eradication</td>
<td>[PP]</td>
<td>Complete eradication</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; After eradication is completed on Anijima and Ototojima, consider management measures. [MOE]</td>
<td></td>
<td>[MF]</td>
<td>Continue with the activities listed on the left. [MOE]</td>
</tr>
</tbody>
</table>

Achievements envisaged to be accomplished as of the time of the preparation of this document in November 2009; some of the listed measures may not be implemented due to weather conditions etc.
<table>
<thead>
<tr>
<th>Island</th>
<th>Activity</th>
<th>Action item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Shortterm target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hahajima</strong></td>
<td>1. Conservation of subtopical rainforest</td>
<td>Elimination of Bischofia</td>
<td>- Creation of medium- and long-term plans</td>
<td>Implementation of elimination cooking to the created medium- and long-term plans (e.g., removal of the alien plant <em>Bischofia</em> to achieve area exclusion in the Sekimon basin).</td>
<td>- Continue elimination</td>
<td>- Continue with the activities listed on the left. (A)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>1. Conservation of subtopical rainforest</td>
<td>Elimination of Bischofia</td>
<td>- Initiating area exclusion</td>
<td>Implementation of monitoring surveys (e.g., of birds, insects, land snails, and plants) before initiating elimination in Sekimon and other areas. (A)</td>
<td>- Continue elimination</td>
<td>- By continuing the activities listed on the left, eliminate from private land in Nishihana and Komoromote; initiate elimination in the Koshinuku area. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Implementation of a system to monitor persisting individuals in the Hapiadai area of Hahajima. (B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Targeting area exclusion in the area north of the line between Hahajima Yashirama Beach and Hapiadai Beach; implementation of elimination at Nishihana and Komoromote. In addition, partial implementation of Hapiadai area. (B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>2. Habitat conservation for endemic birds including Cleistaia ogasawaraensis</td>
<td>Elimination of Ficus microcarpa</td>
<td>- Initiating a survey to determine the existing condition</td>
<td>- Estimating the distribution status of alien woody plants using aerial photographs. (A)</td>
<td>- Initiate area exclusion</td>
<td>- With cooperation among agencies, strategically initiate elimination where necessary. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>2. Habitat conservation for endemic birds including Cleistaia ogasawaraensis</td>
<td>Elimination of Casuarina and Leucaena</td>
<td>- Initiating area exclusion</td>
<td>- Implementation of Casuarina elimination at Minamizaki on Hahajima, targeting area exclusion in FY 2007–2008. Elimination of Leucaena at the site where elimination of Casuarina was carried out in FY 2007 as Leucaena has invaded the site. Implementation of monitoring on the site. (A)</td>
<td>- Continue monitoring after the elimination</td>
<td>- Continue monitoring the invasion status of alien species, such as Casuarina, in excluded areas. (Minamizaki region) (A)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Estimating the distribution status of alien woody plants using aerial photographs. (A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td>Elimination of the green anole</td>
<td>- Completion of area exclusion</td>
<td>- Achieving extremely low density of green anoles having almost no negative impact on the insect ecosystem by FY 2009 within the nature restoration area set up in Shin-Yuhiyogake and Minamizaki on Hahajima. In addition, consider establishing new nature restoration areas. (B)</td>
<td>- Complete area exclusion</td>
<td>- Set up new area exclusion. Conduct point exclusions at the nesting grounds of endangered species. (A)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>3. Habitat conservation for Carduelis sinica kikiti and seabirds</td>
<td>Exclusion of feral cats</td>
<td>- Complete and expand area exclusion</td>
<td>- Set up new area exclusion. Conduct point exclusions at the nesting grounds of endangered species. (A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>4. Habitat conservation for wood-pigeon</td>
<td>Elimination of black rats</td>
<td>- Creation of medium- and long-term plans</td>
<td>- Creation of medium- and long-term plans (B)</td>
<td>- Continue eradication</td>
<td>- Raising awareness of proper pet awareness and working to prevent spread. (A)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>5. Habitat conservation for land snails</td>
<td>Planting of food trees</td>
<td>- Initiating area exclusion</td>
<td>- Elimination of <em>Bischofia</em>. Establishment of research and exclusion measures within the nature restoration area set up in Shin-Yuhiyogake and Minamizaki on Hahajima. In addition, consider establishing new nature restoration areas. (B)</td>
<td>- Continue elimination</td>
<td>- Based on the completion status of elimination in the Chichijima Island Group, initiate eradication. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>6. Other measures</td>
<td>Exclusion of feral cats</td>
<td>- Raising awareness of proper pet awareness</td>
<td>- Raising awareness of proper domestic cat keeping. (A)</td>
<td>- Continue eradication</td>
<td>- Conduct measures to manage domestic and feral cats (achieving more than 90% cat sterilization, 60% microchip implantation, and removal of the cat population). (A)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td>Exclusion of feral cats</td>
<td>- Planting of food trees</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Complete area exclusion</td>
<td>- Based on the completion status of elimination in the Chichijima Island Group, initiate eradication. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Continue eradication</td>
<td>- Based on the completion status of elimination in the Chichijima Island Group, initiate eradication. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of Casuarina and other alien plants</td>
<td>- Initiating a survey to determine the existing condition</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Continue eradication</td>
<td>- Complete eradication. Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Hahajima</strong></td>
<td>2. Habitat conservation for endemic birds</td>
<td>Elimination of black rats</td>
<td>- Creation of medium- and long-term plans</td>
<td>- Creation of medium- and long-term plans (B)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Mukojima</strong></td>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of Casuarina and other alien plants</td>
<td>- Initiating a survey to determine the existing condition</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Continue eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Anejima</strong></td>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of black rats</td>
<td>- Creation of medium- and long-term plans</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Jiimotojima</strong></td>
<td>1. Conservation of sclerophyllous scrub typical of the Hahajima Island Group</td>
<td>Elimination of Leucaena and other alien plants</td>
<td>- Initiating a survey to determine the existing condition</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Mejima</strong></td>
<td>2. Conservation for endemic birds</td>
<td>Elimination of black rats</td>
<td>- Creation of medium- and long-term plans</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Hirashima</strong></td>
<td>1. Ecosystem management considering endemic species</td>
<td>Elimination of Bischofia</td>
<td>- Complete eradication</td>
<td>- Elimination being completed and eradication achieved. approximately 25 individual plants were removed. (A)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
<tr>
<td><strong>Hirashima</strong></td>
<td>2. Ecosystem management considering endemic species</td>
<td>Elimination of black rats</td>
<td>- Creation of medium- and long-term plans</td>
<td>- Implementation of removing competing juvenile trees of Bischofia at Mt. Kuwanoki on Hahajima, in addition to eliminating Bischofia and planting food trees of wood-geniacon. (A)</td>
<td>- Complete eradication</td>
<td>- Considering the status of eradication throughout the Chichijima Island Group, initiate eradication as needed. (B)</td>
</tr>
</tbody>
</table>

*Some of the listed measures may not be implemented due to weather conditions etc.*
<table>
<thead>
<tr>
<th>Island</th>
<th>Activity</th>
<th>Action Item</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mukojima</td>
<td>1. Ecosystem management of Ardisia sieboldii forest and other habitats</td>
<td>Elimination of Leucaena</td>
<td>Continue elimination</td>
<td>Implementation of elimination on Leucaena and alien bamboo and dwarf bamboo species to conserve the remaining forest on Mukojima. [TMG]</td>
<td>by the end of FY 2009</td>
<td>Continue the activities listed on the left and implement adaptive management, aiming to conserve the remaining forest [TMG]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of alien bamboo and dwarf bamboo species</td>
<td>Continue elimination</td>
<td>Implementation of elimination on Leucaena and alien bamboo and dwarf bamboo species to conserve the remaining forest on Mukojima. [TMG]</td>
<td>by the end of FY 2012</td>
<td>Continue the activities listed on the left and implement adaptive management, aiming to conserve the remaining forest [TMG]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of Ficus microcarpa</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Initiate area exclusion. With cooperation among agencies, initiate elimination strategically where necessary. [MOE, FA, TMG, Ogasawara Village]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of black rats</td>
<td>Inhbiting elimination</td>
<td>Implementation of preliminary experimental elimination on Mukojima. [MOE]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Complete the eradication on Mukojima. [MOE]</td>
</tr>
<tr>
<td></td>
<td>2. Habitat conservation for endemic insects</td>
<td>Creation of new albatross breeding ground</td>
<td>Elimination</td>
<td>Transferring and rearing young albatrosses from the breeding grounds on the island of Torishima in the Izu Island Group to Mukojima during the breeding season and implementing artificial rearing until the birds leave the nest. [MOE]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Estimate the distribution status of alien woody plants using aerial photographs. [FA]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of Lantana camara var. aculeata</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Determine the existing condition. Estimate the distribution status of alien woody plants using aerial photographs. [FA]</td>
</tr>
<tr>
<td>Kitanoshima</td>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of alien plants and other related measures</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Determine the existing condition.</td>
</tr>
<tr>
<td></td>
<td>2. Ecosystem management considering endemic species</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nakodojima</td>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of Leucaena</td>
<td>Continue elimination</td>
<td>Implementation of elimination on Leucaena and alien bamboo and dwarf bamboo species to conserve the remaining forest on Nakodojima. [TMG]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Complete eradication.</td>
</tr>
<tr>
<td></td>
<td>2. Ecosystem management considering endemic species</td>
<td>Elimination of alien bamboo and dwarf bamboo species</td>
<td>Continue elimination</td>
<td>Implementation of elimination on Leucaena and alien bamboo and dwarf bamboo species to conserve the remaining forest on Nakodojima. [TMG]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Complete eradication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elimination of black rats</td>
<td>Continue eradication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yomejima</td>
<td>1. Conservation of seabird breeding grounds</td>
<td>Elimination of alien bamboo and dwarf bamboo species</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Complete eradication.</td>
</tr>
<tr>
<td></td>
<td>2. Ecosystem management considering endemic species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nishinoshiba</td>
<td>1. Determine the existing condition</td>
<td>Implementation of a survey to determine the existing condition</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td>Determine the existing condition. Monitor the invasion status of alien species based on the existing condition. [FA]</td>
</tr>
<tr>
<td>Kita-Iwoto</td>
<td>1. Determine the existing condition</td>
<td>Implementation of a survey to determine the existing condition</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Conservation of seabird breeding grounds</td>
<td>Elimination of rats</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td></td>
</tr>
<tr>
<td>Minami-Iwoto</td>
<td>1. Determine the existing condition</td>
<td>Implementation of a survey to determine the existing condition</td>
<td>Initiating a survey to determine the existing condition</td>
<td>Carrying out aerial photography. [FA]</td>
<td>Planned to be completed by the end of FY 2012</td>
<td></td>
</tr>
</tbody>
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<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>Anijima</td>
<td>Completion of eradication on Anijima. Conducting elimination aimed at eradicating feral goats on Ototojima.</td>
<td>The ultimate goal is eradication of feral goats on each island. Island-wide eradication will be conducted, prioritizing Anijima, followed by Ototojima. For the time being, on Chichijima, eradication will be conducted in coordination with other projects related to agriculture.</td>
</tr>
<tr>
<td>Ototojima</td>
<td>Implementation of feral cat exclusion prior to black rat measures on Ototojima from FY 2009. Erecting fences to prevent feral goat and cat invasions in the Higashidaira area of Chichijima, targeting completion in 2010. Removing (exclude) individuals within and outside the fences.</td>
<td>Ogasawara Village eradication &gt; Ototojima: Initiating exclusion &gt; Chichijima: Initiating area exclusion &gt; Chichijima and Hahajima: Raising awareness of proper pet care</td>
</tr>
<tr>
<td>Chichijima</td>
<td></td>
<td>Research, Verification, Experiment</td>
</tr>
<tr>
<td>Nakodojima</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hahajima</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End of FY 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End of FY 2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End of FY 2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Schedule 2. Summary Table of Actions by Alien Species

<table>
<thead>
<tr>
<th>Name of alien species</th>
<th>Activity</th>
<th>Envisaged achievement*</th>
<th>Description</th>
<th>Short-term target after nomination</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bacillus</strong></td>
<td>utilize the ultimate goal, achieve eradication on each island, complement urgent and focused measures on Hahajima. Give priority to elimination works in incepted regions of highly natural conditions (e.g., sub-tropical rainforest) and where measures are expected to be highly effective, such as on islands with highly vulnerable alien invasion by Bacillus and areas surrounding invaded points.</td>
<td>Completion of restoration of the early stage of invasion on Chichijima and Hahajima.</td>
<td>Implementation of monitoring following experimental elimination strategies. Creation of medium- and long-term plans. Implementation of monitoring surveys (e.g., of birds, insects, land snails, plants). Implementation of monitoring of remaining individuals at Higashidaira on Chichijima island. Implementation of elimination in the Higashidaira region of Chichijima. Implementation of monitoring of existing island elimination surveys within the existing condition.</td>
<td>On Hahajima, continue the activities listed on the left and expand the medium- and long-term plans. Add implementation of aerial photography. On Chichijima, continue the activities listed on the left.</td>
<td>End of FY 2019</td>
</tr>
<tr>
<td><strong>Cassanea (and Phrus Multifida)</strong></td>
<td>utilize the ultimate goal, achieve eradication on each island. On islands where urgent treatment is expected to be highly effective, such as peripheral islands in the early stage of invasion, determine the existing condition and implement measures.</td>
<td>Improvement of monitoring following experimental elimination on the plateau of Anijima, and initiating new elimination experiments.</td>
<td>Complete and expand area exclusion.</td>
<td>On Anijima, initiate elimination in FY 2010, with the aim of achieving eradication on Anijima.</td>
<td>End of FY 2019</td>
</tr>
<tr>
<td><strong>Cassanea</strong></td>
<td>utilize the ultimate goal, achieve eradication on each island, complement urgent and focused measures on Hahajima. Give priority to elimination works in incepted regions of highly natural conditions (e.g., sub-tropical rainforest) and where measures are expected to be highly effective, such as on islands with highly vulnerable alien invasion by Bacillus and areas surrounding invaded points.</td>
<td>Establishment of elimination methods.</td>
<td>Implementation of experiments to establish effective technical methodologies for elimination using chemistry on Anijima.</td>
<td>On Anijima, continue the activities listed on the left.</td>
<td>End of FY 2019</td>
</tr>
<tr>
<td><strong>Lantana camara</strong></td>
<td>utilize the ultimate goal, achieve eradication on each island, complement urgent and focused measures on Hahajima. Give priority to elimination works in incepted regions of highly natural conditions (e.g., sub-tropical rainforest) and where measures are expected to be highly effective, such as on islands with highly vulnerable alien invasion by Bacillus and areas surrounding invaded points.</td>
<td>Implementation of experiments to establish effective technical methodologies for eliminating alien woody plants using aerial photographs.</td>
<td>Carrying out aerial photography on each island.</td>
<td>On Anijima, initiate elimination in FY 2010, with the aim of achieving eradication on Anijima.</td>
<td>End of FY 2019</td>
</tr>
<tr>
<td><strong>Microcarpa</strong></td>
<td>utilize the ultimate goal, achieve eradication on each island, complement urgent and focused measures on Hahajima. Give priority to elimination works in incepted regions of highly natural conditions (e.g., sub-tropical rainforest) and where measures are expected to be highly effective, such as on islands with highly vulnerable alien invasion by Bacillus and areas surrounding invaded points.</td>
<td>Establishment of elimination methods.</td>
<td>Implementation of experiments to establish effective technical methodologies for eliminating alien woody plants using aerial photographs.</td>
<td>On Anijima, continue the activities listed on the left.</td>
<td>End of FY 2019</td>
</tr>
</tbody>
</table>

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*Note: The table above provides a summary of the actions planned for alien species in the Ogasawara Islands. Each row details the name of the alien species, the activity planned, the envisaged achievement, and the short-term target after nomination. The time periods for implementation are also indicated.