

A 10-year Action Plan for the Amami Rabbit Protection and Recovery Program (2014 to 2024)

December 2014

Naha Nature Conservation Office

Ministry of the Environment

I. Background

1. Scientific classification and ecology

The Amami rabbit (*Pentalagus furnessi*) is a monospecific species endemically distributed only on Amami-Oshima and Tokunoshima Islands. The species is estimated to have diverged from a group of the Leporidae family in the Middle Miocene (roughly 10 million years ago) (F. Yamada et al. 2002, Matthee 2004); since that time, it has evolved a unique lifestyle while maintaining its primitive morphology. Amami-Oshima and Tokunoshima Islands were separated from the continent by the early Pleistocene of the Quaternary Period (roughly 2 million to 1.7 million years ago), and the rabbit is consequently a relict endemic species for which there are no known related species living in nearby continental areas.

The species digs its burrows mostly in the slopes of primeval forests and uses neighboring mountain streams, secondary forests, and other places with ample herbaceous plants as feeding grounds. The rabbit produces one young per birth, most likely from around September to February and from around March to June (2006 to 2013 Ministry of the Environment survey). Population size of the species is estimated to be somewhere between 2,000 and 4,800 individuals on Amami-Oshima Island and around 200 individuals on Tokunoshima Island (Sugimura and Yamada 2004); the population is considered to be in a serious situation, especially on Tokunoshima Island.

2. Legal position, etc.

Act on Conservation of Endangered Species of Wild Fauna and Flora

- Designated as a National Endangered Species in 2004
- A plan for the species' Protection and Recovery Program was drawn up in 2004.

Wildlife Protection and Proper Hunting Act

- Part of the species' habitat was designated the Mt. Yuwandake National Wildlife Protection Area in 1965.

Act on Protection of Cultural Properties

- Designated a Special National Natural Monument in 1963
- Part of the species' habitat was designated the Kamiya–Yuwandake Natural Monument in 1968

Other

- Listed as Endangered (EN) on the IUCN Red List of Threatened Species (2013)
- Listed as Endangered (EN) on the 4th version of the Red List of Japan (2012)

3. Present results of the Protection and Recovery Program (Attachment; omitted)

(1) Understanding the status of the species and accumulation of knowledge on ecology and other matters

Fecal pellets along mountain streams on Amami-Oshima Island and Tokunoshima Island have been surveyed since FY 2005.

On Amami-Oshima Island, the species seems to be in a recovery trend in recent years as a result of, for example, a mongoose control program that began in FY 2000. On the other hand, on Tokunoshima Island, no feces have been found along some mountain streams for several years, suggesting that the rabbit's existence there is declining (Attachment Figure 1; omitted).

Information on the existence of the species, obtained from monitoring surveys using trail cameras and other means was compiled and the area of distribution of the species was clarified (Attachment Figure 2; omitted).

Information on such characteristics as the species' home range, use of the environment, and genetic characteristics is now understood owing to a wide range of research by researchers and others.

The state of invasion of the species' habitat by small Indian mongooses (*Herpestes auropunctatus*), feral cats (*Felis catus*), feral dogs (*Canis familiaris*), and black rats (*Rattus rattus*) was confirmed. Predation of the rabbits by small Indian mongooses, feral cats, and feral dogs was confirmed through analyses of feces and stomach contents and from the results of the trail camera surveys (Attachment Figure 3; omitted).

Invasion of the species' habitat by domestic rabbits has not been confirmed.

Dead individuals of the species found on forest roads and in other places were collected and analyzed to determine the causes of death. The results showed that, among those cases in which the cause of death could be determined, the number one cause was collisions with motor vehicles, followed by predation by feral cats and feral dogs (Attachment Figure 4; omitted).

(2) Habitat maintenance and improvement

With the aim of maintaining and improving environments suited for the habitation and breeding of the species, data on important areas were extracted and the area to be designated a protection area (National Park) was examined on the basis of such factors as the status of the species and expert opinion. The work needed for the designation was then undertaken.

The distribution status of the small Indian mongooses, feral cats, and feral dogs confirmed to be preying on the species was grasped and measures aimed to eliminate these predators were taken.

With the aim of promoting appropriate keeping of pet dogs and cats, a microchipping support project (from FY 2008 onwards) and a variety of education and awareness-raising activities were implemented with the collaboration of relevant organizations.

(3) Captive breeding, etc.

Information needed for rearing the species has been accumulated through the care of sick or injured individuals.

(4) Measures for effective promotion of the program (education and awareness-raising activities and collaboration with relevant organizations)

Upon the launch of a roadkill-prevention campaign in FY 2009, accident prevention signs were placed at the locations of frequent wildlife collisions with motor vehicles and in other locations where it was deemed necessary. Since then, roadkill numbers have been declining (Attachment Figure 5; omitted).

Education and awareness-raising activities regarding such factors as the species' status, the need for its protection, and the current state of implementation of the Protection and Recovery Program have been promoted through the distribution of pamphlets and other means.

The area including the rabbit's habitat has been routinely monitored and information collected with the collaboration of local concerned parties, national and local public organizations, and many others.

4. Points of concern in relation to protection of the species

A workshop on the Amami Rare Species Protection and Recovery Program was held with the participation of representatives from such organizations as universities, research institutes, administrative bodies, and NPOs on August 9 and 10, 2013. At this workshop, the Protection and Recovery Program that has been implemented since FY 2005 was reviewed and points of future concern in relation to protection of the species were identified. The points identified are summarized as follows:

(1) Understanding the status of the species and accumulating of knowledge on ecology and other matters

The target population size for the species has not been specified.

A population size estimation method needs to be established and implemented.

Further elucidation of behavioral and breeding ecology is necessary.

Genetic investigation of, and research into, for example, genetic diversity and phylogenetic relationships is needed.

(2) Habitat maintenance and improvement

Important areas have not been identified on the basis of an understanding of suitable environmental conditions for the species, nor are such areas assured of protection.

The negative impacts of human activities such as development and of small Indian mongooses, feral cats, etc. must be understood; elimination or mitigation measures for these impacts need to be implemented.

The species' habitat is fragmented in some parts of Amami-Oshima and Tokunoshima Islands.

The factors causing a decline in the species' population on Tokunoshima Island have not been elucidated.

(3) Captive breeding, etc.

There is no rescue system for sick or injured individuals.

The measures for those individuals that cannot be returned to the wild need to be clarified.

(4) Measures for effective promotion of the program (education and awareness-raising activities and collaboration with relevant organizations)

Coordination with a wide range of research done by relevant organizations is necessary.

Collaboration with local governments and others needs to be strengthened, and roles and responsibilities need to be assigned accordingly.

In any developments, careful consideration must be given to Amami rabbits through prior information sharing.

Rules need to be created for observing Amami rabbits in ecotourism, etc.

Education and awareness-raising activities are needed regarding preventing damage by feral dogs and cats and roadkill.

5. Background leading to the creation of the Action Plan

More than 10 years have passed since the launch of the Protection and Recovery Program. Through this program, results have been achieved in a wide range of areas. These include improved understanding of the status and biological characteristics of the species; understanding of the environmental factors, such as small Indian mongooses, that may place pressure on the population; implementation of roadkill-prevention measures; and promotion of education and awareness-raising activities. One of the most important outcomes of the program has been the accumulation of knowledge on, for example, the status and biological characteristics of the species. Information on both of these factors is elemental to planning for species conservation and has been collected through the cooperation and collaboration of researchers and many others. Furthermore, on Amami-Oshima Island, as a result of the mongoose control program, the population size and the distribution area of the species are in a recovery trend.

However, as summarized above in “4. Points of concern in relation to protection of the species,” to succeed in maintaining a stable population of the species some of these points of concern still require attention. Included in the National Biodiversity Strategy of Japan 2012–2020 is National Target C-2: “Increase the number of threatened species whose status on the Red List of Japan has been changed to a lower category of threat.” In addition, with the ultimate aim of having “Amami-Oshima, Tokunoshima, the northern part of Okinawa Island, and Iriomote Island” inscribed on the Natural World Heritage List, Japan decided to add this property to the Tentative World Heritage List at the end of January 2013 and submitted the documents required to the UNESCO World Heritage Centre in February. Amami-Oshima and Tokunoshima Islands are candidate sites as part of the nomination of this property for inscription on the Natural World Heritage List. The Amami rabbit provides indispensable proof of the Outstanding Universal Value of these sites. To be able to meet the target set in the National Biodiversity Strategy of Japan 2012–2020, as well as to have these sites inscribed on the Natural World Heritage List, and to ensure and strengthen their protection, the Protection and Recovery Program must be implemented in such a way that the intended results can be more effectively achieved.

In light of the above, a decision was made to draw up a 10-year plan (from 2014 to 2024) titled “A 10-year Action Plan for the Amami Rabbit Protection and Recovery Program (hereinafter referred to as “the Action Plan”).

II. Objectives of the Action Plan

The objectives of the Action Plan are the elimination or mitigation of factors that cause species decline, including alien species, roadkills, and development; expansion of the distribution areas and population size of the species on Amami-Oshima and Tokunoshima Islands; and ranking in a category lower than Vulnerable (VU), or removal of ranking, on the Red List of Japan by the end of March 2024.

III. Action period

December 1, 2014 to March 31, 2024

IV. Details of activities needed to achieve the Action Plan objectives, and their expected results and indicators

1. Understanding the status of the species and accumulation of knowledge on ecology and other matters

Target 1: Along with continuation of the present monitoring survey, new survey methods will be established so that information on the species, including status, ecology, and genetics, will be more effectively collected and accumulated and then used to assess the population size, etc. Factors causing the reduction in population size of the species, and the extent of their impact, will be clarified.

Activity 1

Activity 1-1: Understand the status and ecology of the species through continued implementation of the present monitoring survey and through the establishment and introduction of a more effective survey method.

Activity 1-1-1: Continue the fecal pellet counts along mountain streams and the monitoring survey using trail cameras and other means to accumulate information on the status and ecology of the species
From FY 2014 to 2023: Accumulate information on the species status through continued implementation of the monitoring survey.

Activity 1-1-2: Reevaluate past monitoring results; revise the survey method, including the survey content, period, and route; and conduct more accurate and effective monitoring.
From FY 2014 to 2015: Evaluate the monitoring results and revise the survey method.
From FY 2016 onwards: Conduct the survey by using the new survey method.

Activity 1-1-3: Examine whether or not new survey techniques such as GPS tracking and digital sound recording need to be introduced to obtain detailed information on the species' home range, habitat use, etc.; introduce viable survey methods; and collect new ecological data.
From FY 2014 to 2015: Study the survey techniques.
From FY 2016 onwards: Introduce and implement new survey methods.

Activity 1-1-4: Set a target population size for the species, examine and develop a more accurate and efficient population-size estimation method, and assess the population size of the species.
From FY 2014 to 2015: Set a target population size for the species and examine and develop a population-size estimation method.
From FY 2016 onwards: Assess the population size of the species by using the new population-size estimation method.

Activity 1-1-5: Use tissues sampled from dead and rescued individuals to determine the genetic diversity and phylogenetic relationships of the species, assess the health of the population, set the unit of conservation on the basis of phylogenetic relationships, determine the causes of death, and so on.
FY 2014: Establish a framework for tissue sampling, preservation, and genetic analysis.
From FY 2015 to 2018: Gain an understanding of the genetic diversity and phylogenetic relationships of the species.

Activity 1-2: Investigate the primary negative factors and the seriousness of their negative effects on the existence of the species on Tokunoshima Island, where reduction in the species' population size is especially of concern.
From FY 2014 to 2016: Conduct the above-described investigation and elucidate the negative factors.

Result 1

Result 1-1-a: Reports and academic papers are published on the status, ecology, and genetics of the species and on the factors causing the decline in population.

Result 1-1-b: Survey methods are improved or newly introduced to determine the status of the species with greater accuracy; survey reports are produced by using these methods.

Result 1-2: Reports are published on the factors placing pressure on the species' existence and the seriousness of these factors on Tokunoshima Island.

Results indicator 1: The number of reports and academic papers published in relation to Result 1

Effect 1

Effect 1: Accumulated knowledge on the status, ecology, genetics, etc. of the species is utilized in conservation measures.

Effect indicator 1: The type of conservation measures and the number of cases in which data and results based on Result 1 are used.

2. Habitat maintenance and improvement

Target 2-1: Important areas with environmental conditions suitable for the species will be maintained, with adequate protection and management. Especially on Tokunoshima Island, the distribution area and population size of the species will be increased through the implementation of measures that aim to, for example, expand the otherwise small buffer zone surrounding the mountain areas. In addition, the issue of whether or not to connect habitats fragmented by roads, farms, etc. with a corridor will be examined as necessary.

Activity 2-1

Activity 2-1-1: Designate habitat with conditions suitable for the species as a National Park and maintain the species' living environment through adequate protection and management of the wildlife protection area and National Park.

Activity 2-1-1-1: Designate, as far as possible, habitat with suitable conditions for the species as a National Park Special Protection Zone or a Class I Special Zone; designate the rest of the species' habitat as National Park so that the species can be adequately protected and managed.
From FY 2014 onwards: Implement the work required for National Park designation.

Activity 2-1-1-2: Regulate development plans and activities that may have an impact on the species' living environment through proper enforcement of the Natural Parks Act and other legislation.

From FY 2014 onwards: Properly enforce the Wildlife Protection , Control and Proper Management Act and the Natural Parks Act (after the designation as a National Park).

Activity 2-1-2: Especially on Tokunoshima Island, expand the buffer zone by, for example, promoting forest restoration of abandoned fields and other land areas surrounding the mountain areas and creating feeding grounds for the species in coordination and collaboration with relevant organizations.

Activity 2-1-2-1: By considering their usability as habitat for the species, from among the areas that surround the mountain areas, extract those that are suitable as buffer zones (e.g. abandoned fields). Then, discuss methods that can be used to restore the areas as habitat and create feeding grounds for the species in coordination and collaboration with relevant organizations.

From FY 2015 to 2016: Extract candidate buffer zone areas and examine methods of forest restoration and creation of feeding grounds for the species.

Activity 2-1-2-2: In coordination and collaboration with relevant organizations, restore the areas extracted as buffer zones as the species' habitat and create feeding grounds for the species.

From FY 2017 onwards: Restore forests and create feeding grounds for the species.

Activity 2-1-3: In relation to the creation of a corridor that connects the fragmented habitat, review the need for corridor creation from genetic and ecological perspectives. If a corridor is judged necessary, study the location, size, structure, etc. of the corridor in coordination with the relevant organizations, local governments, land owners, and other concerned parties.*

From FY 2015 to 2017: Accumulate the genetic and ecological knowledge needed to examine the need for corridor creation.

From FY 2017 to 2018: Discuss the need for corridor creation.

* If corridor is judged necessary, draw up a creation plan and include it within the scope of this Action Plan.

Result 2-1

Result 2-1-1-1: The National Park designation plan designates the habitat as a National Park.

Results indicator 2-1-1-1: The percentage of habitat designated as a National Park

Result 2-1-1-2: Development plans and activities that have negative impacts on the species' survival are regulated on the basis of the National Park designation plan.

Results indicator 2-1-1-2: The number of adequate prior adjustments, authorizations, and law enforcement cases processed in relation to development plans and activities that could have an impact on the species' survival, as determined by examination of the National Park designation plan

Result 2-1-2: A method of extracting areas that can be used to expand the buffer zone is developed; these areas are extracted by using this method and the buffer zone is expanded.

Results indicator 2-1-2: The size of the buffer zone.

Result 2-1-3: Genetic and ecological data related to the creation of a corridor are accumulated and a decision is made on the need for its creation. If creation of a corridor is considered necessary, review meetings are held to discuss its location, size, structure, etc. and the drawing-up of a plan. A corridor creation plan is drawn up.

Results indicator 2-1-3: Data on corridor creation; the decision of the review meeting on the need for corridor creation; and a corridor creation plan (if it is decided that a corridor is necessary)

Effect 2-1

Effect 2-1-1: The size of the species' habitat and population within the confines of the area designated as a National Park is maintained or increased.

Effects indicator 2-1-1: The species' habitat size and population density and the size of the population inside the National Park.

Effect 2-1-2: The size of species' habitat and population are increased as a result of expansion of the buffer zone. Recognition of the importance of a buffer zone in maintaining and increasing the species' population size is improved among relevant organizations, local governments, and concerned parties through discussions and work on expansion of the buffer zone and leads to inclusion of the expansion of buffer zones in the policy.

Effects indicator 2-1-2: The size of the buffer zone and the size of the species' habitat and population inside the buffer zone.

Effect 2-1-3: Recognition of the importance of a corridor in maintaining and increasing the species' population size is improved among relevant organizations, local governments, and concerned parties through discussions on corridor creation. If corridor creation is judged necessary, it is accordingly adopted in the relevant organizations' and local governments' policies.

Effects indicator 2-1-3: The level of recognition of the importance of a corridor and the incorporation of corridor creation in the policy (if corridor construction is judged necessary).

Target 2-2: Elimination of alien species and other factors reducing the population of the species will increase the species' population size and its area of distribution.

Activity 2-2

Activity 2-2: Eliminate, or implement mitigation measures against, alien species such as small Indian mongooses and feral cats so as to increase the species' population size and expand its area of distribution.

Activity 2-2-1: As scheduled in the Phase 2 Small Asian Mongoose Control Plan for Amami-Oshima Island, completely eliminate small Indian mongooses by FY 2022.

From FY 2014 to 2022: Completely eliminate small Indian mongooses.

Activity 2-2-2: Draw up a policy for the capture and handling of feral cats in coordination with local governments, veterinary medical associations, and concerned bodies. Capture feral cats in accordance with this policy and reduce their population size.

FY2014: Discuss and decide on a feral cat capture and handling policy.

From FY 2015 onwards: Implement capture of feral cats in accordance with the policy.

Result 2-2

Result 2-2-1: Completely eliminate small Indian mongooses.

Results indicator 2-2-1: The population size, relative density, and distribution area of small Indian mongooses.

Result 2-2-2: The policy to capture feral cats is decided on, and capture is implemented in accordance with the policy. The population size of feral cats is reduced.

Results indicator 2-2-2: The policy to capture feral cats, the number of feral cats captured, and the capture effort.

Effect 2-2

Effect 2-2-1: Complete elimination of small Indian mongooses results in an increase in the population density and population size of Amami rabbits.

Effects indicator 2-2-1: The population density and population size of Amami rabbits in areas where the density of small Indian mongooses has been reduced or where small Indian mongooses have been completely eliminated.

Effect 2-2-2: Elimination of feral cats results in an increase in the population density and population size of Amami rabbits.

Effects indicator 2-2-2: The population density and population size of Amami rabbits in areas where the population size of feral cats has been reduced.

3. Captive breeding, etc.

Target 3: A rescue system for sick or injured individuals will be constructed. Discussions will be held on a system for rearing those individuals that may never be returned to the wild, and on the policy for collecting ecological, physiological, and pathological information by using reared individuals. Discussions will also be held on the policy for education and awareness-raising activities using live exhibitions and on the policy for captive breeding.

Activity 3

Activity 3-1: In cooperation with relevant organizations, local governments, veterinary medical associations, and concerned bodies, discuss and decide on a policy for the rescue of sick or injured individuals and their return to the wild, and construct a rescue and return system accordingly.

From FY 2014 to 2015: Discuss and decide on a policy for the rescue and return to the wild of sick or injured individuals and construct a rescue system accordingly.

From FY 2016 onwards: Implement the rescue and return to the wild of sick or injured individuals in accordance with the policy.

Activity 3-2: Discuss a policy (and whether it is needed) for the collection of ecological, physiological, and pathological information from reared individuals; education and awareness-raising activities using live exhibitions; and captive breeding, in coordination with relevant organizations, local governments, and concerned parties.

From FY 2014 to 2015: Discuss the policy for the collection of ecological, physiological, and pathological information from reared individuals and education and awareness-raising activities using live exhibitions.

FY 2016: Discuss practical plans on the purpose and mechanism of rearing, construction of facilities, etc. in accordance with the policy document on utilization of reared individuals.

Note: The Action Plan for FY 2017 onward will be discussed later in accordance with the policy document on utilization of reared individuals and the rearing plan.

Result 3

Result 3-1: A policy that lays out, among other things, the rescue system and the criteria for the sick or injured individual's return to the wild is decided on, and rescue is implemented in accordance with this policy.

Results indicator 3-1: A policy document on the rescue and return to the wild of sick or injured individuals; a rescue system; actual results of the rescue and return to the wild of sick or injured individuals; the amount of pathological data; the number of reports and papers published on the rescue and return to the wild of sick or injured individuals; and the number of reports and papers published on pathological data.

Result 3-2: Decisions on the policy for the collection of ecological, physiological, and pathological information from reared individuals; for education and awareness-raising activities using live exhibitions; and for captive breeding.

Results indicator 3-2: A policy document on utilization of reared individuals.

Effect 3

Effect 3-1: The survival rate of rescued individuals and the rate of their return to the wild are increased owing to fast and adequate rescue of sick or injured individuals. Pathological data are also accumulated and used.

Effects indicator 3-1: The survival rate and rate of return to the wild of rescued individuals.

Effect 3-2: A rearing plan, including a plan for the construction of a rearing system and facility, is drawn up with the collaboration of relevant organizations in accordance with the policy document on utilization of reared individuals.

Effects indicator 3-2: Development of a rearing plan in accordance with the policy to utilize reared individuals.

4. Measures for effective promotion of the program

Target 4-1: Education and awareness-raising activities aimed at conservation of the species will be promoted so that not only will local residents' and others' understanding of the measures aimed at mitigating pressure factors (such as damage due to feral cats and dogs and roadkill) be increased, but also their understanding of conservation as a whole will be increased.

Activity 4-1

Activity 4-1-1: Deepen local residents' and tourists' understanding of conservation of the species by implementing a campaign against the damage wrought by feral cats and dogs and another campaign on the roadkill prevention; setting up a website; creating and distributing pamphlets; and carrying out education and awareness-raising activities via press releases aimed at mass media.

From FY 2014 onwards: Implement a roadkill-prevention campaign every year, set up and update a website, and create and distribute pamphlets.

Activity 4-1-2: Conduct a questionnaire survey every five years targeting local residents and tourists to measure the level of their understanding of the conservation of the species.

FY 2015, 2018, and 2023: Conduct the questionnaire survey.

Result 4-1

Result 4-1: The roadkill prevention campaigns are launched, a website is created and updated, pamphlets are created and distributed, and questionnaire surveys are conducted.

Results indicator 4-1: The number of times the campaign is launched; the website interpretation and the number of times it is updated; the number of pamphlets issued; the number of times the questionnaire survey is conducted; and the number of questionnaires collected.

Effect 4-1

Effect 4-1: The number of roadkills is reduced, damage due to feral cats and dogs is lessened, and the level of awareness and understanding among local residents and tourists regarding the factors pressuring the survival of the species, and the conservation of the species, is increased.

Effects indicator 4-1: The number of roadkills; the number of cases of feral cat or dog attack; the level of awareness and understanding of pressure factors and conservation; the number of times covered by newspapers, television, etc.; and the results of the questionnaire survey on levels of awareness and understanding of conservation.

Target 4-2: Collaboration among relevant organizations and bodies, local governments, and concerned parties will be strengthened so that conservation measures for the species can be effectively promoted.

Activity 4-2

Activity 4-2: Through relevant meetings such as review committee meetings on the Amami Rabbit Protection and Recovery Program, and through coordination meetings and other ad hoc meetings held as needed, share and consolidate a wide range of survey results held by, and information on protection measures taken by, relevant organizations and bodies, local governments, and concerned parties, to strengthen collaboration on conservation measures and also to strengthen the consideration that needs to be given to conservation of the species in connection to development plans, etc.

From FY 2014 onwards: Hold review meetings and other necessary meetings such as coordination meetings; consolidate data such as those on habitat distribution that are held by concerned parties, convert them to GIS, publish them, and share survey and other reports.

Result 4-2

Result 4-2: Information on survey results, protection measures, development plans and other matters is shared and review, coordination, and other meetings aimed at collaboration are held. Data on distribution, etc. are consolidated and converted to GIS and reports on the survey results are shared.

Results indicator 4-2: The number of review and coordination meetings held; the amount of GIS and other data consolidated; and the number of shared reports of survey results.

Effect 4-2

Effect 4-2: The number of cases in which development plans and others are revised out of consideration to the species is increased. The number of protection measures implemented through the collaboration of relevant organizations and bodies is increased. The use of data such as GIS and survey results by relevant organizations and bodies and by others is increased.

Effects indicator 4-2: The number of development plans and other plans revised out of consideration for the species; the number of protection measures implemented through the collaboration of relevant organizations and bodies; and the amounts of information on the species status and GIS data shared.

Target 4-3: In addition to annual reporting on the progress of the Action Plan at the Protection and Recovery Program review committee meeting, the state of progress of the Action Plan will be evaluated every five years and the Action Plan will be revised accordingly.

Activity 4-3

Activity 4-3-1: Annually report the implementation results of the Action Plan for the Amami Rabbit Protection and Recovery Program at the Protection and Recovery Program review committee meeting; seek the review committee members' advice on points that need to be improved and on other matters; and make the improvements needed for more effective and efficient implementation of the program.

Activity 4-3-2: In FY 2018, comprehensively evaluate the state of the progress of the Action Plan on the basis of the results and the effect indicators, and revise the Action Plan if necessary. In the final fiscal year, FY 2023, similarly evaluate the level of target achievement of the program's 10-year Action Plan and draw up a new 10-year plan.

Result 4-3

Result 4-3-1: The implementation results are reported annually at the Protection and Recovery Program review committee meeting, and implementation of the program is appropriately improved as advised by the committee members.

Results indicator 4-3-1: Annual holding of the review committee meeting and the improvements made to the program in response to the committee members' advice.

Result 4-3-2: The progress of the program's Action Plan is evaluated comprehensively on the basis of the results and the effect indicators; the Action Plan is revised; and a new Action Plan is drawn up.

Results indicator 4-3-2: Results of progress evaluation of the Action Plan on the basis of the results and the effect indicators; revisions made to the Action Plan; and formulation of a new Action Plan.

Effect 4-3

Effect 4-3-1: The program is implemented with increased effectiveness and efficiency.

Effects indicator 4-3-1: Improvement of the results and the effect indicators in the case of those activities that have been improved.

Effect 4-3-2: The level of target achievement of the Action Plan is comprehensively evaluated according to each result and effect indicator; revisions deemed necessary from the perspective of effectiveness and efficiency are made to the Action Plan; and a new Action Plan is drawn up.

Effects indicator 4-3-2: Improvement of the results and the effect indicators, and improvement of the level of target achievement of the Action Plan.

V. Activity implementation schedule (thickness of the arrow indicates the activity's level of importance)

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1-1-1: Fecal pellet counts and monitoring by using trail cameras	→	→	→	→	→	→	→	→	→	→
1-1-2: Reevaluation of past survey results and revision of the survey method	→	→								
	Examine the method to be introduced									
1-1-3: Collection of new ecological information	→	→								
1-1-4: Population size estimation and assessment of the species status	→	→	→	→	→	→	→	→	→	→
	Establish a new data-collection system									
	Assessment									
1-1-5: Study using dead individuals	→	→	→	→	→					
	Establish a new data-collection system									
1-2: Surveys to identify species population-reduction factors (on Tokunoshima Island)	→	→	→							
2-1-1-1: Work toward designation as a National Park	- - →									
2-1-1-2: Enforcement of regulations	→	→	→	→	→	→	→	→	→	→
2-1-2: Extraction of buffer zones, examination of methods, and expansion of buffer zones		→	→	→	→	→	→	→	→	→
	Extraction and examination									
	Expansion of the buffer zone									
2-1-3: Discussions on corridor creation		→	→	→	→					
2-2-1: Elimination of small Indian mongooses	→	→	→	→	→	→	→	→	→	
2-2-2: Measures against feral cats	→	→	→	→	→	→	→	→	→	→
	Deciding on a policy									
	Implementation of capture in accordance with the policy									
3-1: Construction of a rescue system for sick or injured individuals	→	→	→	→	→	→	→	→	→	→
	Deciding on a policy									
	Rescue in accordance with the policy									
3-2: Policy discussions on collection of information from reared individuals; live	→	→	→							

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
exhibition; and captive breeding										
4-1-1: Education and awareness-raising activities	Website creation	updating								
		Pamphlet creation					Pamphlet creation			
		Other education and awareness-raising activities								
4-1-2: Questionnaire survey										
4-2: Consolidation of various survey and other results from relevant organizations and others, and strengthening of collaboration										
4-3-1: Holding of Protection and Recovery Program review committee meetings										
4-3-2: Evaluation and revision of the Action Plan										

VI. Reference

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