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

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Naha Nature Conservation Office
Ministry of the Environment

I. Background

1. Scientific classification and ecology

The Amami thrush (*Zoothera dauma major*) is an endemic subspecies that breeds only on Amami-Oshima Island. Its total length is roughly 30 cm and its wing length is between 159 and 171 mm (n = 27). Its upper parts are a dull buff or olive and covered in a spotty pattern created by the feathers, which are black at the tip but white around the shaft. It has light under parts with dense crescent-shaped spots and has 12 blackish tail feathers. [Its subspecies, White's thrush (*Zoothera dauma aurea*), has 14 tail feathers.] Its main habitat is a mature evergreen forest with a damp floor. In the breeding season, a short time before sunrise, the birds sing all together, with a unique voice. According to a survey counts made of singing birds during the breeding season since 1999, the number of singing individuals at this time of year is around 500 (Amami Ornithologists' Club 2013). In recent years the area of the thrush's distribution has been expanding, and with this expansion an increase in population has been observed. The population size of the species as of FY 2012 was estimated to range from about 800 to 2000 individuals (Naha Nature Conservation Office, Ministry of the Environment 2014).

2. Legal position, etc.

Act on Conservation of Endangered Species of Wild Fauna and Flora
- Designated as a National Endangered Species in 1993
- A plan for the species' Protection and Recovery Program was drawn up in 1999

Wildlife Protection, Control and Hunting Management 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 National Natural Monument in 1971

Part of the species' habitat was designated the Kamiya–Yuwandake Natural Monument in 1968

Other

Listed as Vulnerable (VU) 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 species' status and monitoring, etc.

Trends in status of the species have been monitored through general simultaneous surveys of singing birds at multiple locations during the breeding season. In recent years, the presence of increasingly more singing birds has been confirmed (Attachment Figure 1; omitted), and an expansion in the bird's area of distribution (Attachment Figures 2 and 3: omitted) has also been suggested.

Information on breeding has been collected through a search for the species' nesting grounds, observation of its breeding activities, and so on.

Identification bands were used to identify individual birds, and each bird's behavior, home range, etc. was determined.

Environmental factors (e.g. forest age, altitude, size of the broad-leaved forest) that may have influenced the size of the species' population were identified and the species' population size was estimated (Attachment Figure 4; omitted) from the results of the general simultaneous survey of singing birds and data on such items as topography and vegetation maps.

(2) Habitat maintenance and improvement

With the aim of maintaining and improving environments suited for habitation and breeding of the species, discussions aimed at designating such areas as a protection area (National Park) were held on the basis of such factors as the species' status and expert opinions, and so on.

(3) Patrol, etc. of the habitat

The area including the habitat of the species has been routinely monitored and information collected by local concerned parties, national and local public organizations, and others.

(4) Promotion of education and awareness-raising activities

Education and awareness-raising activities on the species' status, the need for protection, the current state of implementation of the Protection and Recovery Program, and so on have been promoted through pamphlet distribution and other means.

(6) Consolidation of collaboration for effective promotion of the program

Various entities have been collaboratively and effectively implementing the program in a wide range of situations through numerous surveys, research, and education and awareness-raising activities.

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

A workshop on the Protection and Recovery Program of the Amami rare species was held with the participation of representatives from such organizations as universities, research institutes, administrative bodies, and NPOs on August 9 and 10, 2013. In 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 identified points are summarized as follows:

(1) Understanding the status of the species and monitoring, etc.

Surveys that best correspond to the intended purpose of, for example, understanding the species' distribution area and population size have not been conducted, and the survey methods used have not been standardized.

Past results of the singing bird surveys need to be reassessed.

The accuracy of the population estimation needs to be improved by incorporating an additional measure of efficiency.

Breeding status needs to be determined so as to assess population health.

Genetic investigations of, for example, genetic diversity and phylogenetic relationships are necessary.

(2) Habitat maintenance and improvement

Important areas with suitable environmental conditions for the species are not assured of protection.

The negative impacts of human activities and alien species are not understood, and measures to eliminate or mitigate these impacts have not been taken.

Development activities need to be regulated in consideration of the breeding grounds and breeding season.

(3) Captive breeding, etc.

The need for creating facilities that accept sick or injured individuals so as to collect pathological and other data, the need for conservation outside the species' habitat in rearing and exhibition facilities, and the need for behavioral observation, etc. have not been examined.

(4) Promotion of education and awareness-raising activities

Local residents' levels of awareness are low; this is an indication of a lack of education and awareness-raising activities.

(5) Consolidation of collaboration for effective promotion of the program

Sharing of information on various survey results held by relevant organizations and collaboration with the local community are necessary.

Information on development plans needs to be shared through the collaboration of local governments and businesses.
The roles and responsibilities of relevant organizations are not specified.

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 and of environmental factors such as deforestation that may place pressure on the population. One of the most important outcomes of the program has been the accumulation of knowledge on, 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 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 thrush 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 Thrush 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 area and population size

of the species; and removal by the end of March 2024 from the Red List of Japan as a species for which there is fear of extinction (i.e. Threatened Species).

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 species' status and monitoring, etc.

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 population size, etc.

Activity 1

Activity 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: Continue to monitor the breeding activity and the changes over the years in the distribution and number of singing birds 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 1-2: Reevaluate past monitoring results and improvements that can be made to the monitoring survey method in connection with the population size estimation method that is to be examined in Activity 1-4; and conduct more effective monitoring by taking the survey system and other factors into consideration.
From FY 2014 to 2016: Evaluate the monitoring results and revise the survey method.

Activity 1-3: Use tissues sampled from captured and other individuals to determine the genetic diversity and phylogenetic relationships of the species; collect pathological information; assess the health of the population; set units of conservation based on the phylogenetic relationships; determine the causes of death; and so on.
From FY 2014 to 2016: Establish a framework for tissue sampling, preservation, and genetic and pathological analyses.
From FY 2017 onwards: Assess the health of the population and determine the causes of death.

Activity 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 2016: Set a target population size for the species and examine and develop a population-size estimation method.
From FY 2017 onwards: Assess the population size of the species by using the new population-size estimation method.

Result 1
Result 1-a: Reports (annually) and academic papers are published on the status, ecology, and genetics of the species.
Result 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.
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.
Effects 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: Important areas with environmental conditions suitable for the species will be maintained, with adequate protection and management. The species' population will be increased, and the distribution area expanded, as a result of an understanding of the actions that may have an impact on the species' living environment and the regulations and other measures implemented against these actions.

Activity 2
Activity 2: Designate habitat with suitable conditions 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: Designate, as far as possible, habitat with suitable conditions for the species as a National Park Special Protection Zone or 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 2-2: 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 Hunting Management Act and the Natural Parks Act (after the designation as a National Park).

Result 2

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

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

Result 2-2: Development plans and activities that have a negative impact on the species' survival are regulated in accordance with the National Park designation plan.

Results indicator 2-2: 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 National Park designation plan.

Effect 2

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

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

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.

Activity 3

Activity 3: 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. Also, at the same time, discuss the manner in which those individuals that are difficult to return to the wild should be handled in terms of collecting ecological, physiological, and pathological information and in terms of education and awareness-raising activities.

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

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

Result 3

Result 3: 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; the rescue system is constructed; and rescue is implemented in accordance with this policy and system.

Results indicator 3: A policy document on the rescue and return to the wild of sick or injured individuals; an organizational chart of the 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.

Effect 3

Effect 3: The number of surviving individuals and the number of individuals returned to the wild are increased owing to fast and adequate rescue of sick or injured individuals. Pathological data are also accumulated and utilized.

Effects indicator 3: The number of rescued individuals that survive and the number of those that are returned to the wild.

4. Patrol, etc. of the habitat

Target 4: The habitat will be continuously patrolled and information shared among various local entities.

Activity 4

Activity 4: Various local entities continuously patrol the habitat (from FY 2014 to 2023).

Result 4

Result 4: Sighting information is accumulated and shared among concerned parties.

Results indicator 4: The number of patrols performed and the number of entities that participated.

Effect 4

Effect 4: Actions that may have a negative impact on maintaining the population (e.g. unintentional intrusions of humans into the species' nesting ground) are prevented.

Effects indicator 4: The number of cases in which actions are revised after certain instructions.

5. Promotion of education and awareness-raising activities

Target 5: Education and awareness-raising activities aimed at conservation of the species will be promoted so that local residents' and others' understanding of conservation will be increased.

Activity 5

Activity 5-1: Deepen local residents' and tourists' understanding of the need for the conservation of this species by carrying out education and awareness-raising activities via setting up a website; creating and

distributing pamphlets; press releases aimed at the mass media; and conducting volunteer participatory surveys.

From FY 2014 onwards: Set up (FY 2014) and update (FY 2015 onwards) a website; create and distribute pamphlets (once between FY 2015 and 2017 and again between FY 2020 and 2022); and discuss and conduct volunteer participatory surveys (discussions to take place between FY 2015 and 2016 and trial surveys to be conducted sometime after FY 2017).

Activity 5-2: 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 5

Result 5: The website is created, pamphlets are created and distributed, and volunteer participatory surveys and questionnaire surveys are conducted.

Results indicator 5: The website interpretation and the number of times it is updated; the number of pamphlets issued; the number of times the volunteer participatory survey is conducted; the number of volunteer participants; the number of times the questionnaire survey is conducted; and the number of questionnaires collected.

Effect 5

Effect 5: Levels of awareness and understanding among local residents and tourists in regard to conservation of the species are increased.

Effects indicator 5: Levels of awareness and understanding regarding conservation; the number of times covered by newspapers, television, etc.; and the results of the questionnaire survey on the level of awareness and understanding of the need for conservation.

6. Consolidation of collaboration for effective promotion of the program

Target 6-1: 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 6-1

Activity 6-1: Through relevant meetings such as review committee meetings on the Amami Thrush 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 annual review meetings and other necessary meetings; consolidate data such as those on habitat distribution held by concerned parties, convert them to GIS, and publish them; and share survey and other reports.

Result 6-1

Result 6-1: 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 survey results are shared.

Results indicator 6-1: 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 6-1

Effect 6-1: 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 6-1: 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 6-2: 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 6-2

Activity 6-2-1: Annually report the implementation results of the Action Plan for the Amami Thrush Protection and Recovery Program at the Protection and Recovery Program review committee meeting; seek the review committee members' advice on the 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 6-2-2: In FY 2018, comprehensively evaluate the state of 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 6-2

Result 6-2-1: The Protection and Recovery Program review committee meetings are held, the implementation results are reported, and appropriate improvements are made to the program in response to the committee members' advice.

Results indicator 6-2-1: Annual holding of the review committee meeting and the improvements made to the program in response to the committee members' advice.

Result 6-2-2: The progress of the program's Action Plan is evaluated on the basis of the results and the effect indicators; the Action Plan is revised accordingly; and a new Action Plan is formulated.

Results indicator 6-2-2: Progress evaluation results, revisions made to the Action Plan, and formulation of a new Action Plan.

Effect 6-2

Effect 6-2-1: The program is implemented with increased effectiveness and efficiency.

Effects indicator 6-2-1: Improvement of the results and effect indicators for those activities that have been improved.

Effect 6-2-2: 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 6-2-2: Improvement of the result 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: Determination of the changes in distribution and number of singing birds over the years, and monitoring of breeding activities	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
1-2: Reevaluation of past survey results and revision of the survey method	➡	➡	➡							
1-3: Genetic and pathological surveys	Sampling and establishment of a system ➡	➡	➡	→	Assessment of health of the population and identification of causes of death →	→	→	→	→	→
1-4: Population size estimation and assessment of the species status	Setting a target and developing methods ➡	➡	➡	➡	➡	Assessment ➡	➡	➡	➡	➡
2-1: Work toward designation as a National Park	- - →									
2-2: Enforcement of regulations	→	→	→	→	→	→	→	→	→	→
3: Construction of a rescue system for sick or injured individuals, and implementation of rescue, etc.	Construction of a system ➡	➡	→	→	Implementation of rescue and return to the wild of sick or injured individuals →	→	→	→	→	→
4: Patrol of habitat	→	→	→	→	→	→	→	→	→	→
5-1: Education and awareness-raising activities through a website, pamphlets, etc., and volunteer participatory surveys	Website creation ➡	updating →	→	→	→	→	→	→	→	→
		Pamphlet creation →	→	→			Pamphlet creation →	→	→	
		Discussions on volunteer participatory surveys →	→	Trial surveys →	→					
5-2: Questionnaire survey		→			→					→
6-1: Consolidation of various survey and other results from relevant organizations and others, and strengthening of collaboration	→	→	→	→	→	→	→	→	→	→

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
6-2-1: Holding of Protection and Recovery Program review committee meetings	→	→	→	→	→	→	→	→	→	→
6-2-2: Evaluation and revision of the Action Plan					➡					➡

VI. References

Amami Ornithologists' Club (2013) The 20th 2013 Amami Thrush Survey Research Report, p. 3.

Naha Nature Conservation Office, Ministry of the Environment (2014) 2013 Reference Material for the Amami Endangered Species Protection and Recovery Discussion Meeting, Reference 5-1, p. 5.