A 10-year Action Plan for the Okinawa Rail Protection and Recovery Program

(2015 to 2025)

December 2015
Naha Nature Conservation Office
Ministry of the Environment

I. Species

Okinawa rail (Gallirallus okinawae)

II. Scientific classification and ecology

The Okinawa rail (*Gallirallus okinawae*, or *Hypotaenidia okinawae* according to some sources) is an endemic species that lives only in the northern part of Okinawa Island (in the so-called Yambaru area). It was designated as a new species in 1981 (Yamashina and Mano, 1981) and is the only flightless bird species in Japan. It is thought that an ancestral species that flew from somewhere in the south to Okinawa Island several tens of thousands of years ago gradually adapted to ground dwelling and evolved into the present Okinawa rail. This was likely possible because Okinawa Island had no native carnivores that were powerful predators; moreover, a diversity of organisms existed in the subtropical evergreen broad-leaved forest, providing an abundance of small ground-dwelling animals that the rail could feed on. These conditions thus enabled the species to flourish despite its inability to fly (Ozaki, 2005).

In modern times 32 flightless rail species have been identified globally. The bulk of these are found on islands, and many are endemic species or endemic subspecies of these islands. Thirteen of the species have been classified as extinct since the 17th century. Even though 19 species remain extant, one of them is classified as extinct in the wild and 13 are classified as threatened. The causes of this situation include hunting, environmental destruction, introduction of alien species, and other impacts of human origin (Ozaki, 2005).

The Okinawa rail inhabits the forest floors of evergreen broad-leaved forests, as well as nearby grasslands. The breeding season is from March to June, and it nests on the ground. The clutch size is four or five. Although the species is omnivorous, it feeds mainly on small animals such as insects, crustaceans, and

amphibians. In 1985, the population size of the species was estimated at roughly 1,800 individuals. However, by around 2000, because of a reduction in the abundance of habitat with conditions suitable for the species, as well as the impacts of predation by such animals as small Indian mongooses (*Herpestes auropunctatus*; a designated Specified Invasive Alien Species under the Act on the Prevention of Adverse Ecological Impacts caused by Specified Invasive Alien Species), dogs, and cats, this number was estimated to have decreased to fewer than 1,000 individuals. Since this discovery, efforts have been made to control small Indian mongooses, and as a result the population size and area of distribution have been in a recovery trend. In 2013, the population size was estimated at roughly 1,500 individuals.

III. 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 2004.

Wildlife Protection, Control and Hunting Management Act

Part of the species' habitat was designated as Mt. Yambaru (Ada) National Wildlife Protection Area in 2009.

Part of the species' habitat was designated as Mt. Yambaru (Aha) National Wildlife Protection Area in 2009.

Part of the species' habitat was designated as Mt. Nishimedake Prefectural Wildlife Protection Area in 1967.

Part of the species' habitat was designated as Mt. Yonahadake Prefectural Wildlife Protection Area in 1967.

Part of the species' habitat was designated as Sate Prefectural Wildlife Protection Area in 1967.

Act on Protection of Cultural Properties

Part of the species' habitat was designated as Mt. Yonahadake Natural Monument Protection Area in 1972

Designated a National Natural Monument in 1982

Other

Listed as Endangered (EN) on the IUCN Red List of Threatened Species (2013)

Listed as Critically Endangered (CR) on the 4th version of the Red List of Japan (2012)

IV. Reasons for creation of the Action Plan

More than 10 years have passed since the launch of the Protection and Recovery Program, and 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 the northern part of Okinawa Island, as a result of the mongoose control program, the population size and the distribution area of the species are in a recovery trend (Attachment 1for more information; omitted) However, to succeed in maintaining a stable population of the species, some points of concern still require attention.

In addition, 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." Furthermore, the northern part of Okinawa Island is a candidate site as part of the nomination of the "Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island, and Iriomote Island" for inscription on the Natural World Heritage List. The Okinawa rail provides indispensable proof of the Outstanding Universal Value of this region. 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 2015 to 2025) titled "A 10-year Action Plan for the Okinawa Rail Protection and Recovery Program" (hereinafter referred to as "the Action Plan").

V. 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, roadkill, and development; expansion of the distribution areas and population size of the species in the northern part of Okinawa Island; recovery of the distribution area and population size of the species to the 1985 level; and ranking of the species in a category lower than Endangered (EN) on the Red List of Japan by the end of March 2025. In addition to these, the Action Plan aims to establish techniques for rearing, captive breeding, return to the wild, and reinforcement or reintroduction of the species in the wild. Such measures would give the species resilience in the future should the wild population again be dramatically reduced through, for example, the deterioration of environmental conditions or the spread of infectious disease.

By the end of FY 2019 (the midpoint of the Action Plan), the species is to be settled in the area north of the Shioya-Fukuji Dam (the "S-F" line) in the southern Yambaru area (Ogimi and Higashi Villages).

VI. Action period

December 1, 2015 to March 31, 2025

VII. Secondary objectives and details of activities to be implemented in relation to the Action Plan

Secondary objectives and details of the relevant activities to be implemented to achieve the objectives of the Action Plan effectively are defined below.

1. Investigation and monitoring of the species' status

Target 1: Along with continued implementation of the present monitoring survey to determine the status of the species, improvements will be made to enhance the accuracy of population size estimations. New survey methods needed to elucidate the ecology of the species—information that is essential for its conservation—will be established. This will ensure that ecological and genetic information is collected and accumulated more effectively and then used to assess population size, etc. Moreover, the factors reducing the species' population size and the extent of their impact will be clarified.

Activity 1

Activity 1-1: Along with continuation of the present call-playback survey to monitor the species' population, reevaluate past survey results and make the necessary improvements to the survey method and the population size estimation method.

Activity 1-1-1: Monitor the status of the species through continuous implementation of the present call-playback survey.
From FY 2015 to 2017: Accumulate information on the existence of the species through continued implementation of the monitoring survey.
From FY 2018 to 2024: Reflect the results of reevaluation (Activity 1-1-2 below) of the survey method and continue implementing the monitoring survey.

Activity 1-1-2: To improve the accuracy of the call-playback survey and the population-size estimation method, reevaluate the response rate, response distance, etc. of the call playback. Then reflect the reevaluation results in the survey method and analysis used to estimate population size.
From FY 2015 to 2017: Reevaluate the survey method and reflect the reevaluation results in the monitoring survey method.

Activity 1-2: Elucidate the unknown ecology of the species in the wild and in captivity—for example, its population structure, sociality, dispersion, and movement; genetic diversity; infectious diseases; and other

factors—by developing and introducing new survey methods and by improving the present survey methods.

Activity 1-2-1: With the cooperation of researchers and research institutes, review the present survey methods and other survey methods used to study species with similar living patterns (e.g. capture, radio-tracking, and individual identification). Then develop and introduce safe and reliable survey methods to elucidate the ecology of the species (e.g. its breeding behavior, population structure, sociality, dispersion, and movement).
From FY 2015 to 2016: Review survey methods and develop new survey methods.
From FY 2017 onwards: Introduce new survey methods and elucidate the ecology of the species.

Activity 1-2-2:
From FY 2017 to 2019: Collect data on, for example, age structure and the mortality rate for each age group through surveys based on individual identification. Use these data to elucidate the structure and dynamics of the population.

Activity 1-2-3:
From FY 2015 to 2017: Through direct observation and by analyzing the gastric contents of dead individuals, clarify the types and amounts of food eaten by the species and their seasonal fluctuations.

Activity 1-2-4:
From FY 2015 to 2017: Cooperate with research institutes such as universities, with research into the species' calls, etc.

Activity 1-2-5:
From FY 2015 to 2016: Through collaboration with research institutes, investigate the species' genetic diversity and population fragmentation in the wild.

Activity 1-2-6:
From FY 2015 to 2019: Investigate infectious diseases present among wild individuals and collect information on potential infectious diseases to identify those diseases that are feared to have a devastating impact on population maintenance. Monitor the identified infectious diseases by examining captured, rescued, or dead individuals.

Activity 1-3: Identify the environmental conditions essential for the species.

Activity 1-3-1:

From FY 2015 to 2017: On the basis of the results of the call-playback survey and other surveys, conduct a comparative analysis of biological and physical environmental factors in representative high- and low-population-density areas.

Activity 1-3-2:
From FY 2015 to 2017: Collect ecological information on the species, such as population size, breeding habits, behavior, and territory in high-population-density areas, and identify the factors contributing to maintenance of the high density of the species in the said areas.

Result 1
Result 1-1: Information on the species' estimated population size, population density, and distribution is accumulated by using a more accurate population-size estimation method.

Result 1-2: New survey methods are developed and introduced. The present survey methods are also improved. As a result, the unknown ecology of the species (such as its population structure, sociality, dispersion, movement, genetic diversity, and infectious diseases) will become clear.

Result 1-3: Factors essential for the maintenance and improvement of population density are identified through the comparative analysis of biological and physical factors among habitats with different population densities and from ecological information obtained in high-density areas.
Results indicator 1: The number of reports and academic papers published in relation to Result 1. In the case of Result 1-1, annual reports on the species' estimated population size, population density, and distribution.

Effect 1
Effect 1: Accumulated knowledge on the status of the species, such as its population size and distribution, ecological information, and genetic information, are used in conservation measures.
Effects indicator 1: The types of conservation measures and the numbers of cases in which reports based on Result 1 are utilized.

2. Habitat maintenance and improvement
Target 2: The population size of the species will recover through the maintenance of suitable habitat, the control of alien and other predatory species, and a marked reduction in the number of roadkill deaths.

Activity 2
Activity 2-1: By considering the connectivity of the species' habitat, secure habitat with conditions suitable for the species as a National Park and National Wildlife Protection Area (Special Protection Zone). At the

same time, coordinate with relevant organizations as necessary to reduce the impact of development plans and other activities that can affect the existence of the species.

Activity 2-1-1: By considering the species' population density and distribution and the connectivity of its distribution, designate suitable habitat as a National Park and National Wildlife Protection Area (Special Protection Zone).
From FY 2015 to 2016: Designation as a National Park
From FY 2017 to 2021: Designation as National Wildlife Protection Area

Activity 2-1-2:
From FY 2015 to 2024: When development plans and other activities that can affect the existence of the species are prepared, liaise beforehand with relevant organizations as necessary to reduce the impact of such plans.

Activity 2-2:
From FY 2015 to 2022: As planned in the Phase 2 Mongoose Control Plan, continue with control work aimed at complete elimination of the small Indian mongoose, a predator of the species, from the northern part of Okinawa Island by the end of FY 2022. (For details, refer to "Phase 2 Mongoose Control Plan for the Northern Part of Okinawa Island.")

Activity 2-3: Through collaboration with local governments and relevant bodies, promote appropriate keeping of pet cats and dogs; implement effective capture of stray and feral cats and dogs (hereinafter referred to as "cats and dogs"); reduce the population sizes of these cats and dogs; and adequately implement measures against these predators of the rail.

Activity 2-3-1:
From FY 2015 to 2024: Effectively capture feral cats in the species' habitat by using information on the sighting of feral cats and the results of a trail camera survey and other surveys. In addition, local government will be a key player in the effort to capture stray cats and dogs and reduce their numbers.

Activity 2-3-2:
From FY 2015 to 2019: In the area centering on Kunigami, Ogimi, and Higashi Villages, strictly implement the appropriate keeping of pet cats in accordance with the municipal ordinances of each village through education and awareness-raising activities on microchipping of pet cats, breeding restrictions, and so on.

Activity 2-3-3:

From FY 2015 to 2019: With the collaboration of Okinawa Prefecture, Kunigami, Ogimi, and Higashi Villages, and the small settlements within these three villages, strengthen community-wide efforts toward appropriate keeping of pet cats.

Activity 2-3-4:
From FY 2015 to 2024: Set up and hold a liaison conference and other meetings centered on local governments in relation to control measures for cats and dogs.

Activity 2-4: With the collaboration of local governments, to control the population size of the jungle crow (*Corvus macrorhynchos*), which preys on the species and thus affects its existence, implement measures to remove those factors that can increase the number of jungle crows.

Activity 2-4-1:
From FY 2015 to 2017: Develop an understanding of the effect of predation and other factors associated with jungle crows on the Okinawa rail.

Activity 2-4-2:
From FY 2015 to 2019: Share information with local governments that are implementing measures against harmful birds and mammals, with the aim of reducing these species' populations to appropriate sizes by implementing measures to prevent their population increase, capturing them, etc.

Activity 2-5: Investigate and analyze the causes of Okinawa rail roadkill from the human perspective and from the perspective of the rail. Reflect the findings in a wide range of prevention measures, education and awareness-raising activities, and collaborations with relevant organizations to improve the effectiveness of these efforts.

Activity 2-5-1: Collect and organize data from surveys of Okinawa rail roadkill (the frequency of appearance of the species near the road, the conditions at the time of their appearance, etc.) conducted by various organizations and then reflect the results in a variety of prevention measures. Place special emphasis on examining and understanding the status of the species and the environment in the areas where roadkills are increasing.
From FY 2015 to 2016: Implement the survey and organize data on roadkills.
From FY 2015 to 2024: Reflect the survey results in prevention measures, and implement these measures.

Activity 2-5-2:

From FY 2015 to 2016: Organize a place for residents (road users) to express and exchange their opinions so that information on the status of the species' roadkill and on roadkill prevention measures can be shared with residents. At the same time, collect opinions and ideas from the local community.

Activity 2-5-3:
From FY 2015 to 2024: With the collaboration of relevant organizations and bodies and the local community, strengthen efforts toward roadkill prevention and efforts to promote education and awareness-raising activities during the species' breeding season, when roadkills are frequent.

Result 2
Result 2-1: The habitat of the species is secured owing to designation of the habitat as a National Park and National Wildlife Protection Area (Special Protection Zone). The necessary measures are taken to reduce the impacts of development and other activities that can affect the existence of the species.

Results indicator 2-1-1: The size, boundaries and other details of the areas designated as a National Park and National Wildlife Protection Area (Special Protection Zone) in the habitat.

Results indicator 2-1-2: The numbers of developmental and other activities in the species' habitat that have been changed to lessen the impact on the species.

Result 2-2: The population size of small Indian mongooses and the area they inhabit are reduced. Small Indian mongooses are eradicated from the northern part of Okinawa Island by the end of FY 2022.

Results indicator 2-2: The number of small Indian mongooses captured, their density index, and their area of distribution. The confirmed status of small Indian mongoose eradication.

Result 2-3: The population sizes of cats and dogs and the area they inhabit are reduced. Appropriate keeping of pet cats is strictly implemented.

Results indicator 2-3-1: The number of sightings of cats and dogs, the numbers captured, and the area of distribution.

Results indicator 2-3-2: The number of registered, microchipped, sterilized, and castrated pet cats.

Result 2-4: The population of jungle crows is reduced to an appropriate size.

Results indicator 2-4: The number of jungle crows among captured harmful birds and mammals, and their area of distribution.

Result 2-5: The numbers of roadkill deaths and road injuries are reduced.

Results indicator 2-5: The numbers of roadkill deaths and road injuries.

Effect 2

Effect 2: The population size of the Okinawa rail is increased and its area of distribution is expanded.

Effects indicator 2: The population size, population density, and area of distribution of the Okinawa rail, as estimated from surveys of the species' status.

3. Captive breeding and return to the wild of bred individuals

Target 3: Techniques to support reinforcement or reintroduction of the species in the wild should the wild population again fall to critical status will be established. For this purpose, rearing and breeding techniques that take genetic diversity into account will be developed, and techniques for returning or reintroducing the species to the wild will be established. In addition, knowledge of the species' ecology will be collected from individuals being reared in captivity.

Activity 3

Activity 3-1: Implement more sound rearing management of the population being reared in captivity by taking genetic diversity and risk dispersion into account.

Activity 3-1-1:

From FY 2015 to 2016: Set a clear goal for the number of individuals that needs to be reared in captivity by taking genetic diversity into account.

Activity 3-1-2:

From FY 2015 to 2016: To prevent the potentially devastating effects of infectious diseases on the entire population being reared under captivity, obtain the understanding of the local community; examine the need for risk dispersion; and then secure the cooperation of existing rearing facilities and zoos.

Activity 3-1-3:

From FY 2017 to 2024: To secure the target population size for rearing in a safe and sound manner, distribute individuals that are to be reared in captivity among existing rearing facilities and zoos and rear them in those facilities.

Activity 3-2: Establish the techniques needed to breed the species in captivity.

Activity 3-2-1:

From FY 2015 to 2019: Establish rearing techniques and the techniques needed to breed the species in captivity.

Activity 3-2-2:

From FY 2016 to 2018: Secure the facilities needed for pairing the species.

Activity 3-2-3:
From FY 2016 to 2020: Establish rearing and breeding techniques by working together with facilities cooperating in dispersed rearing.

Activity 3-3: Establish techniques to support the return or reintroduction of individuals reared in captivity to the wild, and hold discussions on the standards for their implementation.

Activity 3-3-1:
From FY 2015 to 2018: Establish a monitoring technique that can be used to track and monitor individual birds by conducting test releases of birds in captivity and in the wild.

Activity 3-3-2:
From FY 2015 to 2018: Hold discussions on standards for the return or reintroduction of individuals bred in captivity to the wild.

Result 3
Result 3-1: A management target that takes genetic diversity into account is set for the population reared under captivity. Rearing facilities and zoos cooperating in dispersed rearing are secured, and dispersed rearing is implemented.
Results indicator 3-1: The target population size needed to maintain genetic diversity in the population reared under captivity and the actual population size of the animals reared under captivity. The number of facilities and zoos cooperating in dispersed rearing.

Result 3-2: Rearing and breeding techniques for individuals are established; the species is reared and bred stably; and these techniques are passed on to facilities and zoos cooperating in dispersed rearing.
Results indicator 3-2: The status of rearing and breeding of the species and the status of preparation of rearing and breeding manuals, etc. The status of captive breeding in facilities cooperating in dispersed rearing.

Result 3-3: Standards for the reinforcement or reintroduction of individuals in the wild are discussed. Techniques for this reinforcement or reintroduction are established.
Results indicator 3-3: Standards for the reinforcement or reintroduction of individuals in the wild.
Reports, academic papers, and other publications on techniques for this reinforcement or reintroduction.

Effect 3

Effect 3: A system to allow for reinforcement or reintroduction of individuals in the wild should the continued existence of the wild population reach critical status is constructed.

Effects indicator 3: If, in fact, reinforcement or reintroduction is implemented, the status of existence of these individuals and the status of recovery of the wild population.

4. Promotion of education and awareness-raising activities

Target 4: Efforts toward education and awareness-raising activities to mitigate pressure on the species will be increased; understanding of the need for conservation of the species will be promoted; and ways in which the local community can be revitalized through conservation and effective utilization of the species will be studied.

Activity 4

Activity 4-1: Implement more effective education and awareness-raising activities to mitigate pressure on the species.

Activity 4-1-1:
From FY 2015 to 2019: With the collaboration of relevant organizations, place emphasis on the implementation of education and awareness-raising activities, hold joint events, and so on.

Activity 4-1-2:
From FY 2015 to 2024: Through the collaboration and cooperation of relevant organizations and bodies, and also local communities, emphasize the implementation of roadkill-prevention activities as well as education and awareness-raising activities, such as roadkill-prevention campaigns, rail festivals, and campaigns against abandonment of cats and dogs.

Activity 4-1-3:
From FY 2015 to 2024: Predict the behavior of the species on the basis of past data, up-to-date information, and weather factors, and send out Okinawa rail roadkill-risk forecasts to drivers and local residents to raise their awareness of the potential appearance of the species near roads.

Activity 4-1-4:
From FY 2015 to 2024: Circulate information on roadkill prevention through events such as Okinawa rail observation events.

Activity 4-2: Promote understanding of the species through education and awareness-raising activities, and study ways in which the local community can be revitalized through the species' conservation and effective utilization.

Activity 4-2-1:
From FY 2015 to 2024: In addition to education and awareness-raising activities that use images, pamphlets, and other purpose-made media, frequently and pro-actively implement education and awareness-raising activities through local events.
Activity 4-2-2:
From FY 2015 to 2024: Liaise with car rental associations, *kyodo-baiten* (community cooperatives), and other private associations, and hold far-reaching education and awareness-raising activities.

Activity 4-2-3: Jointly with local governments and residents, study and formulate programs and projects that connect conservation of the species to revitalization of the local community, and implement these programs and projects.
From FY 2017 to 2019: Study and formulate programs that revitalize the local community.
From FY 2020 to 2024: Implement the local community revitalization programs.

Activity 4-3: Create rules that need to be followed when observing the species near small settlements and along roadsides where it is frequently sighted, and make these rules widely known to visitors and tour guides.

Activity 4-3-1:
From FY 2015 to 2016: To make sure that the rules do not interfere with local residents' lives and that they benefit the local community, incorporate local residents' opinions, and draw up unified observation rules that take the species' behavior and ecology into consideration.

Activity 4-3-2:
From FY 2017 to 2024: Distribute the observation rules to tour guides, roadside stations, relevant organizations and bodies and others so that they become widely known.

Activity 4-3-3:
From FY 2017 to 2024: Okinawa rail observation events and other events are held by local communities.

Result 4
Result 4-1: Education and awareness-raising activities intended to reduce pressure on the species are implemented. Okinawa rail roadkill-risk forecast information is sent out. Okinawa rail observation events and other events intended to increase understanding of the species' roadkill prevention are held.
Results indicator 4-1: The number of activities and events held through the collaboration of relevant organizations and bodies and local residents to mitigate pressure on the species. The number of times the

topic is covered by newspapers, television, and other media. The number of times roadkill-risk forecast information is sent out. The number of observation events held.

Result 4-2: Materials for education and awareness-raising, such as images, pamphlets, and other materials on the conservation of the species, are published and distributed to local residents, tourists, car rental agents, and so on. Education and awareness-raising activities are held at local events. Projects that aim to conserve the species and revitalize the local community are implemented. Understanding among concerned parties is improved and the numbers of supporters and advocates are increased.

Results indicator 4-2: The numbers of education and awareness-raising materials (images, pamphlets, etc.) published and distributed. The number of times that education and awareness-raising activities aimed at conserving the species is held at local events, and the number of participants at each event. The number of local community revitalization projects aimed at species conservation, and the number of implementation. The number of times the topic is covered by newspapers, television, and other media. The number of liaison events held with private associations.

Result 4-3: Rules for observing the species are created and become widely known to visitors and tour guides.

Results indicator 4-3: The observation rules, the people to whom they are distributed, and the numbers of materials distributed to inform the rules. The numbers of locally held education and awareness-raising activities, observation events, and other events implemented.

Effect 4

Effect 4-1: The number of roadkills and the number of victims of attacks by cats and dogs are decreased. Awareness and understanding of pressure factors and conservation of the species are increased among local residents and tourists.

Effects indicator 4-1: The number of roadkills; the number of victims of attacks by cats and dogs; and the level of awareness and understanding of pressure factors and conservation of the species among local residents, residents of Okinawa Prefecture, tourists, etc.

Effect 4-2: Understanding of the species is increased and leads to revitalization of the local community.

Effects indicator 4-2: The level of understanding of the species, and the numbers of local community revitalization programs and policies.

Effect 4-3: People observing the Okinawa rail begin to improve their methods of observation.

Effects indicator 4-3: The number of observers that comply with the rules.

5. Consolidation of collaboration for effective promotion of the program

Target 5: Collaboration among relevant organizations and bodies, educational institutions, local governments, and concerned parties will be strengthened so that species conservation measures can be effectively promoted and the Action Plan is reflected in local government conservation plans and other relevant plans.

Activity 5

Activity 5-1: To promote more effective conservation measures, share information with the relevant facilities, promote allocation of the roles and responsibilities of each relevant organization and body, and promote collaboration among these relevant organizations and bodies in relation to protection measures.

Activity 5-1-1:
From FY 2015 to 2024: Strengthen collaboration with facilities that are presently engaged in education and awareness-raising, and promote information-sharing and cooperation in various activities.

Activity 5-1-2:
From FY 2015 to 2024: Allocate roles and responsibilities among relevant organizations and bodies, local governments, and concerned parties to promote more effective conservation actions.

Activity 5-2: Promote environmental education through collaboration with institutions in the field of education.

Activity 5-2-1:
From FY 2015 to 2024: In collaboration with elementary and junior high schools in the local community and Okinawa Prefecture, use relevant facilities in extracurricular classes to provide environmental education on protection of the Okinawa rail and on the Yambaru area. Moreover, hold Okinawa rail observation events, surveys, and other activities with local elementary and junior high schools.

Activity 5-2-2: In collaboration with the Okinawa Prefectural government, village educational institutions, and others, develop educational programs to protect the Okinawa rail and the Yambaru area, and use the programs in extracurricular classes and environmental education.
From FY 2015 to 2017: Develop educational programs
From FY 2018 to 2024: Implement the educational programs

Activity 5-2-3:
From FY 2015 to 2024: Provide environmental education to tourists and to students on school trips from outside Okinawa Prefecture by making use of the Yambaru Wildlife Conservation Center, the Okinawa Rail Ecology Center, and other facilities.

Result 5

Result 5-1: Liaison, discussions, and a wide range of coordination meetings are held to collaborate and share information on survey results, protection measures, development plans, and other matters. A variety of data are visualized, and reports on survey results and other information are shared.

Results indicator 5-1: The numbers of liaison, discussion, and coordination meetings held. The amount of data consolidated and visualized. The number of reports on survey results shared.

Result 5-2: Environmental education is held through, for example, extracurricular activities and observation events and joint surveys by elementary and junior high school students in the three local villages and in Okinawa Prefecture. Environmental education programs on the Okinawa rail and the Yambaru area are developed. Environmental education activities for tourists and for students on school trips are implemented.

Results indicator 5-2: The number of extracurricular activities (such as environmental education and joint surveys) held. The number of environmental education activities offered to tourists and to students on school trips.

Effect 5

Effect 5-1: The number of cases in which development plans and others are revised out of consideration for the species is increased. The number of protection measures implemented through the collaboration of relevant organizations and bodies is increased. The use of data and survey results by relevant organizations and bodies and by others is increased.

Effects indicator 5-1: 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 amount of data shared.

Effect 5-2: The level of understanding of the need for protection of the species is improved among elementary and junior high school students in the three local villages and in Okinawa Prefecture. The number of elementary and junior high school students from the local communities and Okinawa Prefecture who participate in observation events and extracurricular activities is increased. The level of understanding of the need to protect the species is improved among tourists and among students on school trips.

Effects indicator 5-2: The level of understanding of the need for protection of the species among elementary and junior high school students in the three local villages and in Okinawa Prefecture. The numbers of participants in observation events and extracurricular activities aimed at protection of the species.

6. More effective and efficient implementation of the Action Plan

Target 6: The progress of the Action Plan will be reported on annually at the Yambaru Rare Wildlife Protection and Recovery Program Review Committee Meeting (hereinafter referred to as the "Protection and Recovery Program Review Committee Meeting") and at the meeting of the Okinawa Rail Protection and Recovery Program Working Group (hereinafter referred to as the "Working Group"), and the improvements identified will be implemented. The state of progress of the Action Plan will be evaluated every five years and the Action Plan will be revised accordingly.

Activity 6

Activity 6-1:

From FY 2015 to 2024: Annually report the results of implementation of the Action Plan at the Protection and Recovery Program Review Committee Meeting and at the meeting of the Working Group; seek the review committee members' advice on points that need to be improved; and make the improvements needed for more effective and efficient implementation of the program. Introduce more effective conservation methods in response to changes in social conditions and developments in science and technology.

Activity 6-2: In FY 2019, comprehensively evaluate the state of progress of the Action Plan on the basis of the results and effect indicators, and revise the Action Plan if necessary. In the final fiscal year, FY 2024, similarly evaluate the level of target achievement of the Action Plan.

FY 2019: Mid-term evaluation

FY 2024: Final evaluation

Result 6

Result 6-1: Implementation results are reported annually at the Protection and Recovery Program Review Committee Meeting and at the meeting of the Working Group, and implementation of the program is appropriately improved as advised by the committee members.

Results indicator 6-1: Annual holding of the Protection and Recovery Program Review Committee Meeting and the meeting of the Working Group, and the status of improvements made to the program in response to the committee members' advice.

Result 6-2: The state of progress of the Action Plan is evaluated comprehensively on the basis of the results and the effect indicators, and the Action Plan is revised accordingly.

Results indicator 6-2: Results of the evaluation of the state of progress of the Action Plan on the basis of the results and effect indicators, and the resulting revised Action Plan.

Effect 6

Effect 6-1: The Okinawa Rail Protection and Recovery Program is implemented with increased effectiveness and efficiency.

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

Effect 6-2: Necessary improvements are made to the Action Plan, and the status of the species is improved.

Effects indicator 6-2: The status of improvements in the species' population size, distributional area, and so on.