

Mongoose is
not to blame

Do not bring **alien species** into the Island

The small Indian mongoose is considered harmful animal which give damages the ecosystem on Amami-Oshima Island, however, the mongoose is important species in the original habitat in India. We have to recognize the ecosystem damages caused by the introduction of invasive alien species, and not repeat again same mistakes in future.

Three principles for preventing damages caused by the invasive alien species

No importation

Do not introduce or import the invasive alien species from their natural ranges to non-original habitats.

No release

Do not release or abandon the alien species kept or cultivated

No spreading

Do not spread the alien species, which already exist in specific habitat to other areas.

Existing alien species on Amami-Oshima Island

We successfully eradicated the mongooses, however, many alien species are still recognized on the Island, such as stray domestic cats, goats, black rats, and lance-leaved coreopsis and parrot feather (water grass). Effective measures are necessary for control of these alien species which give directly and indirectly damages on ecosystems on the Island.



Stray domestic cat



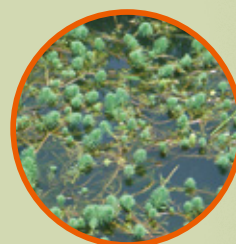
Free range goat



Black rat



Lance-leaved coreopsis



Parrot feather

If you see mongoose, please contact us!

Mongooses (3 species of family Herpestidae) are listed in the Invasive Alien Species Act, and prohibited raising and transferring of live animals by the law. The mongooses were eradicated on Amami-Oshima Island, however, still inhabit on Okinawa Island and there is a real risk of re-invasion of the animals to Amami-Oshima. If you see a mongoose, please contact the Amami Wildlife Centre. (TEL:0997-55-8620, RO-AMAMI@env.go.jp)



Amami Wildlife Centre

Conservation of the nature on Amami-Oshima Island

Do not
abandon
your pets

The predatory cats and dogs abandoned or escaped live in wild, act like the mongooses and attack the precious animals on Amami-Oshima Island. The stray pets have risks of road kill and infection animal disease. It is important for your pet's well-being to keep the pets inside following animal welfare rules.



Pet Cat Ordinance

Pet Cat Ordinance of 5 local governments on Amami-Oshima Island

- To insert microtips, and attach neck rigs and register domestic cat kept
- To keep cats inside door
- To castrate cats except cats complete keeping inside
- To keep maximum 4 cats, you need special permission to keep more than 5 cats
- Do not feed recklessly stray cats



Ministry of the Environment

March 2025
Published by:
Amami Okinawa Regional Environment Office,
Ministry of the Environment, Government of Japan

FOR ALL THE LIFE ON EARTH



Biodiversity

☆ Amami mongoose busters ask
for your cooperation in our activities.



Web log
<https://amb.amamin.jp>



facebook :
<https://www.facebook.com/amami-mongoosebusters/>



YouTube :
https://www.youtube.com/channel/UCt9-OrQ-jH9_lwALhFDU1ZVA

Text by : Japan Wildlife Research Center
Design : artpost inc.
Photo : Mamoru Tsuneda, Teruho Abe, Kano Koide, Yoshihito Goto,
Kazuki Yamamuro, Ryuta Yoshihara, Yoshiyuki Ryuzaki
and Japan Wildlife Research Center



Achievement of
mongoose
eradication from
Amami-Oshima
Island, September
2024

Amami-Oshima, Conservation of the only one ecosystem in the world



Mongoose Eradication Project on
Amami-Oshima Island



環境省
Ministry of the Environment



Natural World Heritage Site: Amami-Oshima Island, Tokunoshima Island, Northern Part of Okinawa Island, and Iriomote Island

Four Ryukyu Islands, located at the southern end of the Japanese archipelago, has been registered as a Natural World Heritage Site in 2021. Many endemic species inhabit on the islands, and it is a region with outstanding biodiversity even in Japan.

Announcement of mongoose eradication from Amami-Oshima Island, September 2024

The Ministry of Environment, Government of Japan (MOEJ) announced an eradication of small Indian mongoose (*Urva auropunctata*) from Amami-Oshima Island, on 3rd September 2024. Forty-five years later from release of the mongooses, and 31 years later from start of control program for the animals, the global outstanding achievement of the eradication on the Island was accomplished. Mr. Ueda, the director of Nature Conservation Bureau, MOEJ, announced “Eradication of the mongooses on the Island” in a ceremony and press conference on the day. Attendance of the ceremony, member of the Amami Mongoose Busters (AMB), researchers and government officers congratulated the accomplishing a difficult task by round applause. It was a moment when the aspirations of people who had been involved in the mongoose control project for many years came to fruition.



Can rear
my rabbit kids
free from fear



Thanks



Peaceful forest
come back to
Amami



Coming back
original forest of
Amami-Oshima

NPO, Amami Ornithologists' Club
Ms. Yumiko Nagai

The Amami Ornithologists' Club has conducted census of Amami Thrush since 1994. The number of birds observed was small in beginning years, however, it has gradually increased, and records the largest one in 2024. We have watched the nature of forest on Amami-Oshima which recovers its original condition according to decrease of mongoose population on the Island. I amaze the rich biodiversity of the forest on the Island after the mongoose eradication. I thank everyone who achieved the eradication project.



Sympathy for lives killed,
we no make second
mongoose problem

Amami Mammalogical Society
Ms. Yukari Handa

I thanks to AMB for their effort to the mongoose eradication. As a veterinary, I have sympathy for lives of mongooses killed. It is important that we do not make second mongoose problem. I think about appropriate keeping of pet animals and other tasks with the people on the Island. After this, I want to continue conservation activities of Amami-Oshima.



What's great about
the achievement,
the mongoose eradication
from Amami-Oshima

- The largest area of the eradication cases of mongooses in the world
- Realize zero from ca.10,000 animals which expanded half area of the Island in peak year
- Rescue of precious ecosystems of the World Heritage Site

Control of the invasive alien species (IAS) is an important task for biodiversity conservation, and many programs are conducted in the world. There are few successful cases of the control programs of the IAS, decrease of ranges and population, in Japan. The eradication of the mongoose on Amami-Oshima is a rare success story in the world. The mongoose control program started in worst time of ca.10,000 animals estimated which occupied half area of the Island.

The eradication of mongooses on Amami-Oshima, where venomous snake inhabit, is a global achievement. The news of successful story on the Island has been reported across the world, and give hope for peoples who struggle the control of IAS.

Comments from
key persons on
Amami-Oshima



Congratulation !
and thanks !

Nature photographer
Mr. Mamoru Tsuneda

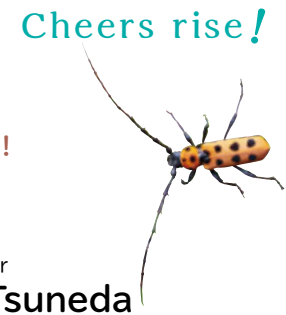
I was the first to advised organization concerned about threats of the mongoose to nature of Amami-Oshima. Long time has passed from the first warning, but AMB achieved my dream of the mongoose eradication. Thanks. Amami rabbit and Ryukyu long-haired rat increase dramatically in the forest without mongoose. Stray cats and free-range goats still remain on the Island, I want to conserve the forest of Amami as the World Heritage site.



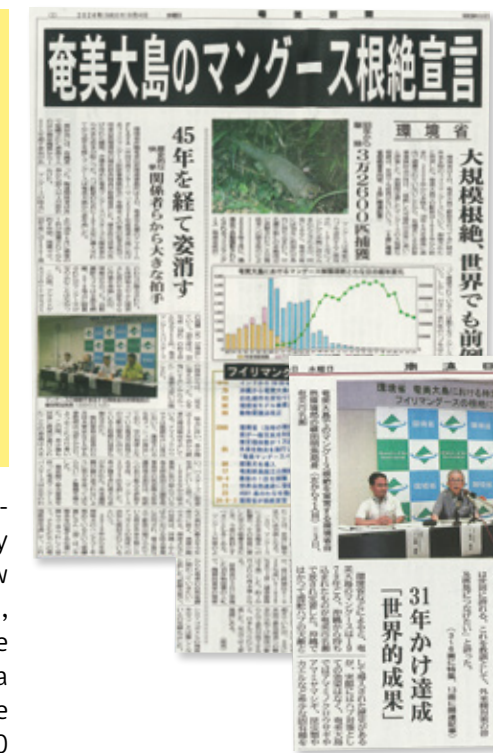
Not forget the capturing
excited of the last one
mongoose

Nature guide,
Amami Wildlife Research Center
Mr. Masahiro Nishi

I joined a member of AMB in 2005. I like insect and field work everyday of AMB was exciting for me. I though at beginning that mongoose eradication was difficult, but decrease of mongoose gradually gave me hope of its eradication. It is me that capturing the last one mongoose on the Island in 2018. I thought that there was possibility of the last mongoose, and I excited it, and it was a fact. I now work as a nature guide of Amami-Oshima, and appreciate that I can guide visitors to the forest on the Island where many animals come back.



Cheers rise!



Newspapers given
prominent
coverages

Amami Shinbun
September 4, 2024



Nankai Nichinichi Shinbun
September 4, 2024



Biology of the small Indian mongoose

The mongoose is not a native animal and an alien species in Japan. They were introduced to Okinawa Island in 1910, and released to Amami-Oshima Island in 1979 for control of venomous habu snake and rats. The mongooses have given damage to ecosystems, agriculture products and human health on the islands. In Japan, 3 mongoose species of Herpestidae family were designated as specified alien species under the Invasive Alien Species Act in 2005.

What is the alien species to be designated by the Cabinet order?

Individuals and their organs, stipulated under the Invasive Alien Species Act, have been brought to Japan from overseas and cause harm to ecosystems, people's lives, and the farming industry. Breeding, transporting, importing, and releasing of the invasive alien species are prohibited by the Act. In addition to the 3 mongoose species, a total of more than 160 species, including mosquitofish and bull frog, are designated as the specified alien species by the Act.

Biology of the small Indian mongoose, *Urva auropunctata*

Q Distribution

Original distribution of small Indian mongooses is very wide in South Asia from the Middle East to China. The mongooses were introduced into Hawaii and Caribbean islands for rats and other animal control, and now inhabit in 76 islands at least in the world. The mongooses have been confirmed in Amami-Oshima, Okinawa Island and Kagoshima Prefecture in Kyusyu in Japan.

Q Body size

Total length
Males: 60 cm / Females: 50 cm
Weight
Males: 600 to 1,000 g
Females: 400 to 600 g

Q What eat ?

The mongooses eat primarily on invertebrates such as insects and small vertebrates, lizards and mice, but also prey birds and medium size mammals.



Why the mongooses introduced to Amami-Oshima Island?



A habu snake eats a black rat. The mongooses were released for decreasing habu snake, however, the snake population did not shrink significantly.

The people of Amami-Oshima Island and Okinawa Island have suffered from bitten damage by the venomous habu snakes. Another major problem was that the black rat population was increasing too much and they were eating the sugar cane. In 1910, mongooses were brought from India, and released in Okinawa Island in the hope that they would decrease the population of the habu snakes and black rats. This effort, however, brought very little effect on decrease of the habu snakes and rat population. The mongoose, whose population have increased in Okinawa Island, was introduced on Amami-Oshima Island. It is said that 30 mongooses were first released in Akazaki Peninsula of Naze City (now Naze, Amami City) in 1979.

What happened after release of the mongooses?

The mongooses are diurnal and both the habu snakes and black rats are nocturnal, so that the mongooses introduced did not decrease populations of the snakes and rats. On the other hand, young Amami rabbits, which spend the daytime in their burrows, and the Amami woodcocks, which make their nest on the ground, became

preferred prey animals of mongooses, and consequently their population sizes have decreased. The release of mongooses into the island with the hope that they would decrease the populations of the habu snakes and black rats led to an unforeseen result, the decrease of the native species on Amami-Oshima.

A mongoose invading into a Amami rabbit burrow



Mother checking her young in its burrow



A mongoose comes into a burrow and shows its tail and leg

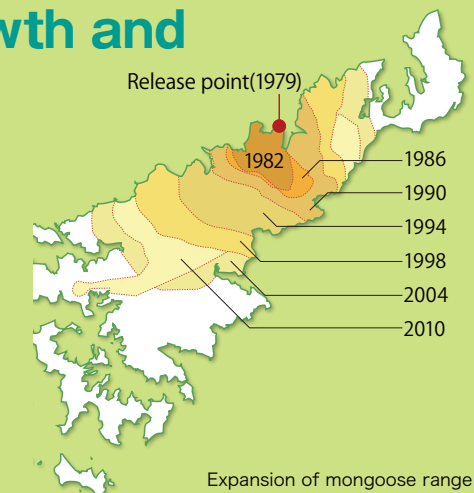


A mongoose left a burrow with a baby rabbit in its mouth after two minutes later

(photo by Fumio Yamada)

Mongoose population growth and spread whole the Island

The mongooses, released in Akazaki Peninsula of Naze City (now Naze, Amami City) in 1979, expanded their range and distributed to Yamato-son and Sumiyou-son (now Amami City Sumiyo-cho) in western part and Naze City and Tatsugo-cho in eastern part of the Island in 1998. By 2010, mongooses were trapped in Uken-son, which is located in the southwestern part of Amami-Oshima. It is said that 30 mongooses were released onto Amami-Oshima in 1979, but by 2000 their population had increased to approximately 10,000.



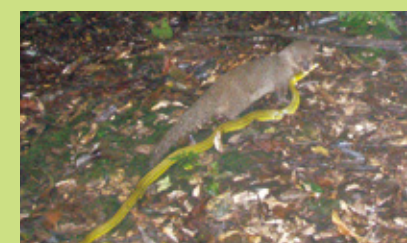
Expansion of mongoose range with years

Vanishing of native species on the Island

According to growth of population and expansion of range of the mongooses, many native animals were eaten by them on the Island. From analyses of the stomach contents and fecal samples of the mongooses, the remains of animals such as Amami rabbits and Amami spiny rats were

observed. It was also confirmed that mongooses preyed on amphibians such as Amami Ishikawa's frogs as well as reptiles such as Okinawa tree lizard. The populations of such native species on Amami-Oshima decreased as the mongoose population increased.

Animals attacked by mongooses



A mongoose catching Ryukyu green snake



Amami rabbit fur in mongoose feces (photo by Fumio Yamada)



Okinawa tree lizard

Mongoose eradication project

No mongoose and restoration of the nature of Amami-Oshima

The mongooses were released into Amami-Oshima in 1979, and trapping of the animals by residents on the Island started in 1996. From 2005, the Amami Mongoose Busters (AMB) have conducted energetically the mongoose eradication program, and finally accomplished the eradication of the animals from the Island in 2024. We review the 45 years history of the mongoose and eradication activities on Amami-Oshima.

From 1979 Prehistory of mongoose eradication project

Kinsakubaru, a protection forest on the Island, was a habitat of many endemic species such as Amami rabbit, Amami Ishikawa's frog and Amami woodcock before the release of the mongoose. After the release of the predatory animals in 1979, the population of the endemic species have decreased in the Kinsakubaru which located near the mongoose release area. People on the Island expected decrease of the habu snake through the mongoose predation, however, several people noticed biodiversity degradation on the Island by the mongoose release. The Amami Mammalogical Society was one of

the groups which gave warnings to the mongoose release issue.

The member of the Amami Mammalogical Society started study on ecological damage by the mongooses from 1989, when several agricultural damages occurred by them. The study on food habits of the mongooses showed predation on endemic species by the animals, and gave caution against the issues to the people on the Island. A damage control program by the mongooses was started in Naze Ctiy from 1993, based on the research of mongoose food habits.



From 2005 Establishment and activities of Amami Mongoose Busters

The mongoose control program started since 2000. At the beginning stage of the project, voluntary member of hunter association supported the control of animals using traps, and the local governments paid them in subsidies. Quite a lot of the mongooses were captured by the program, and regular monitoring showed decrease of density index of the animals. But, eradication of the mongoose was difficult because trapping in mountain areas was hard task for the bounty trappers. Therefore,

the Amami Mongoose Busters (AMB) was organized for eradication of the mongoose from whole areas on the Island in 2005. People on the Island expected AMB to contribute recovery of the indigenous species such as Amami thrush and endemic frogs through the mongoose eradication project. AMB started their activities based on these backgrounds.

A photo of AMB member at a day



From 2018 Trapping the last mongoose, and making a new action plan to confirm eradication

AMB set up the traps almost everywhere on Amami-Oshima Island. The mongoose population has decreased with the everyday steady trapping and inspection work by AMB. The last one mongoose was trapped by AMB in Naze Kominato, Amami City, in April 2018, after that certain evidence of mongoose inhabitant was not obtained. The days of no mongoose trapped and no recorded by sensor cameras continued after April 2018. But, lack of mongoose information by traps and sensor

cameras is not same as no mongoose on the Island. MOEJ prepared a new action plan for mongoose control program to confirm the mongoose eradication and accomplishment of the program based on scientific evidence in 2021. Probability of eradication was estimated by the continuous monitoring data of trapping, sensor cameras and reaction of the detection dogs according to the control program.

In 2024 Announcement of the eradication of mongoose based on scientific review

Six years past after the last one mongoose was captured on the Island in 2018. Probability of eradication of mongoose was analyzed based on the data of trapping and sensor cameras, and responses of detection dogs on Amami-Oshima. The analysis shows near 100% of probability of the extermination of animals, and an ad-

visory board of scientists concluded the eradication of mongoose from the Island. Ministry of the Environment announced the accomplishment eradication of the mongoose from Amami-Oshima Island, the World Heritage site, in 3rd September, 2024.

Time line
Population size
estimated

1979

Release of the mongooses introduced from Okinawa Island into Amami-Oshima

1989

Commencement of study on ecosystem damage by the mongooses (Mammalogical Society of Amami)

1,000

1993

Launch mongoose control program to prevent agricultural products damage (Local governments)

6,000

1996

Launch study on status and a model control program (MOEJ and Kagoshima Prefectural Gov.), and subsidy as a nuisance animal control (Kagoshima Prefectural Gov.)

10,000

2000

Start full control program of the mongooses as IAS control (MOEJ)

2003

Finish the nuisance animal control program by the local governments

5,000

2005

Enforcement of the Invasive Alien Species Act (MOEJ)
Start the mongoose eradication project on Amami-Oshima Island (MOEJ)
Establishment of the Amami Mongoose Busters (AMB)
Formulating mongoose control plan on Amami-Oshima Island (MOEJ)

1,000

2008

Introduction of mongoose detection dogs for the control project (AMB)

150

2013

Formulation second period of mongoose control plan (MOEJ)

2017

Establishment the Amamigunto National Park (MOEJ)
Revision the second period of mongoose control plan (MOEJ)

10

2018

Capture only one mongoose from April 2017 to March 2019 due to decrease of the mongoose population (AMB)

2021

Formulation of a new action plan to confirm eradication of the mongoose (MOEJ)
Registration of the Island to a natural world heritage site

0

2024

Announcement of the eradication of mongoose from Amami-Oshima Island (MOEJ)

AMB, contributor to mongoose eradication

Professionals to conserve the ecosystem on Amami-Oshima

AMB was organized in 2005 with the aim of eradication of mongooses and restoring the native animals on Amami-Oshima. It is an organization of professionals that strives to protect the wildlife of Amami-Oshima. These professionals have the skills to capture mongooses, the power to climb mountains, the knowledge about wildlife, and are passionate about the eradication of mongooses. They have worked every day even if rainy day and encounter with poisonous habu snakes, for conservation of the ecosystem of Amami-Oshima.



Professional trapping skill for eradication of mongoose

Capture by traps

Cage traps were used at first for trapping of the mongooses by the residents of the Island in 2000. AMB introduced lethal pipe traps for more effective trapping of the mongooses. A new long pipe trap was developed to reduce by-catch of Amami spiny rats in their habitats. More than 30,000 traps of all types have been set systematically to cover whole areas on the Island.



Cage trap



Pipe trap

An effective tool for searching mongooses

Detection dogs

In order to catch mongooses more effectively, AMB introduced detection dogs, which are trained to track down mongooses and find their burrows. The mongoose detection dogs have a good sense of smell and special abilities of motion, and are trained to follow the direction of persons of the project. Handlers of AMB give training the dogs, and they use the dogs passed the examination in field. The mongoose detection dogs go to the forests to detect smell and feces of the mongooses with the han-

dlers, and if they find hiding holes of the animals, the handlers try to catch them. After that even if no capturing of the mongoose on the Island, the handlers continued search of the animals with the detection dogs in everywhere the Island. The detection dogs and handlers walked around a total of 14,789 km from 2018 to 2023 fiscal year. We expect important roles for the detection dogs for search of re-invasion of the mongooses and other alien species.



A total of 13 mongoose detection dogs, terrier, German shepherds, and pointers, and 8 handlers (photo, 2019)

Restoration of the native species suggests mongoose absence on the Island

Monitoring of the native species

In order to monitor the restoration of native species as a result of the decreasing mongoose population, monitoring studies for the native animals are being carried out. The sensor cameras which set in all over the Island show steady recovery of distribution of Amami rabbit, Amami spiny rat and Amami woodcock. There are a lot of rabbit droppings in the forest floor where few animals was observed during the mongoose dominant period. The healthy nature situation is a proud of what AMB have achieved.



Photos taken by sensor cameras; Ryukyu long-haired rat (above) and Amami rabbits (below)

A trump card for removing last local population of mongoose

Chemical control

Although population decline of the mongoose, AMB has encountered an issue in 2016. They found a small local population of mongoose in roadside slope. The area was covered by rock fall prevention nets, which hampered trapping and work of the mongoose detection dogs. AMB and MOEJ considered use of chemical control for the eradication in the area. AMB used a chemical material which contains "Diphacinone" as principal element and usually use for mouse and rat control. They made poison bates contained the Diphacinone, and put them in the area in April 2017 and March 2018 with caution in consumption by other animals. After spreading the poison bates, the sensor cameras never took photos of the mongoose, and no trapping of the animals in and around the area. The control using poison bait for the mongoose was the first case in Japan, and it was an important step to the eradication.



Poison bates for chemical control



A mongoose eats the poison bates

First case in the world, how the eradication of mongoose was accomplished?

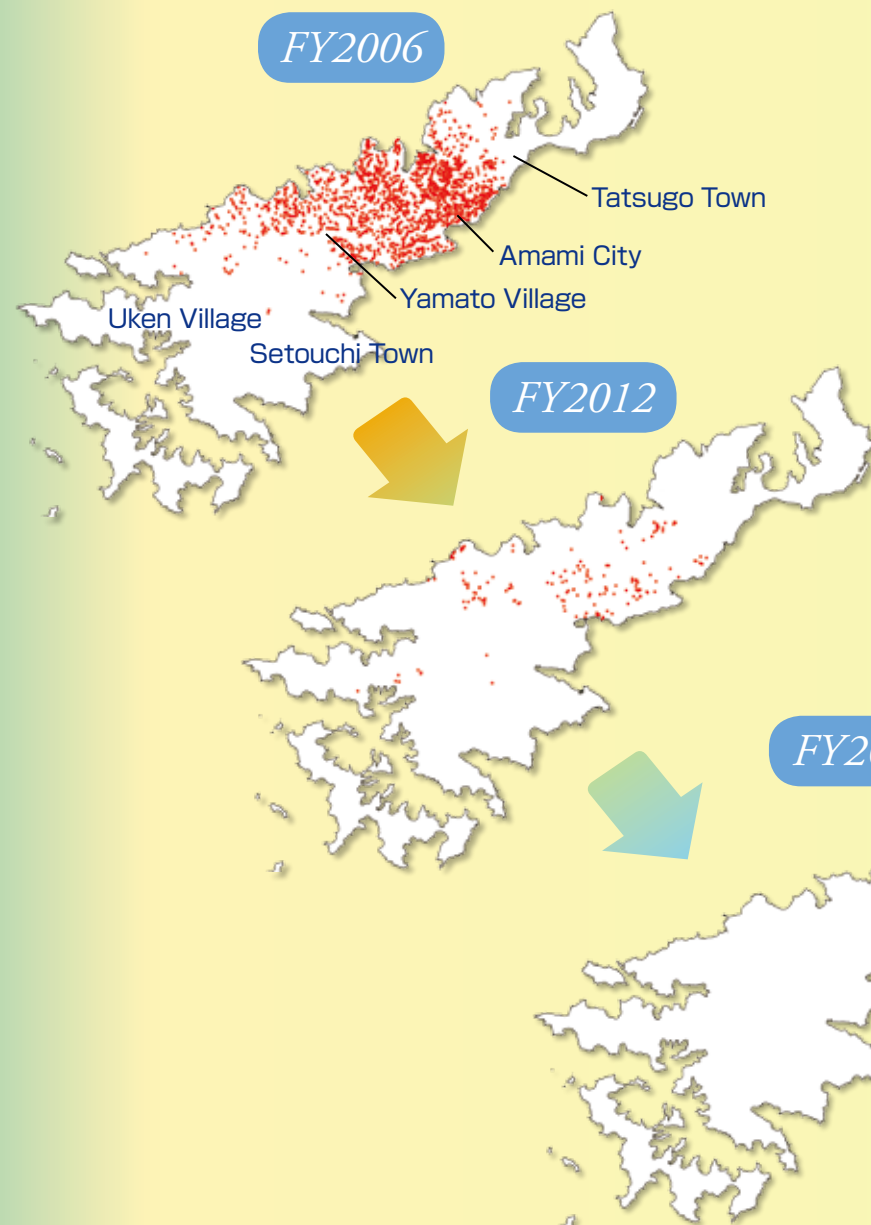
Success cases of the eradication of mongooses were ever accomplished in small islands less than around 1km². The eradication of the mongoose on Amami-Oshima, which is not a little island (712 km²), is an accomplishment in the world. The small Indian mongooses originally inhabit in south Asia, however they establish in Hawaii and

Caribbean islands as a invasive alien species. The mongooses attack native animals on the islands, and give damage to agricultural products. The eradication accomplished on Amami-Oshima bring hope to people who try to exterminate the mongooses on the islands.

Continuous trapping for scattering and disappear of range of mongoose

Decreasing of range

● capture sites of the mongooses



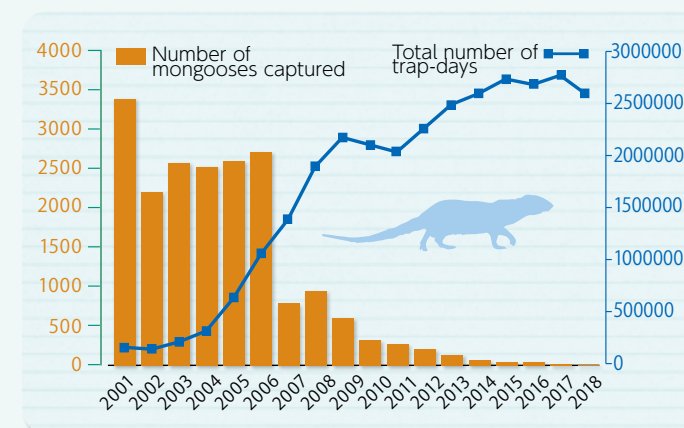
The maps of trapping sites of the mongooses indicate population decline and dividing of range in the central area of the Island from 2006 to 2012. In 2018, AMB caught a mongoose only one site, and after this event, the mongoose was disappeared on the Island. The high-density trapping and introduction of the mongoose detection dogs have contributed the eradication of mongoose from Amami-Oshima.



Continuous trapping reduced mongoose population

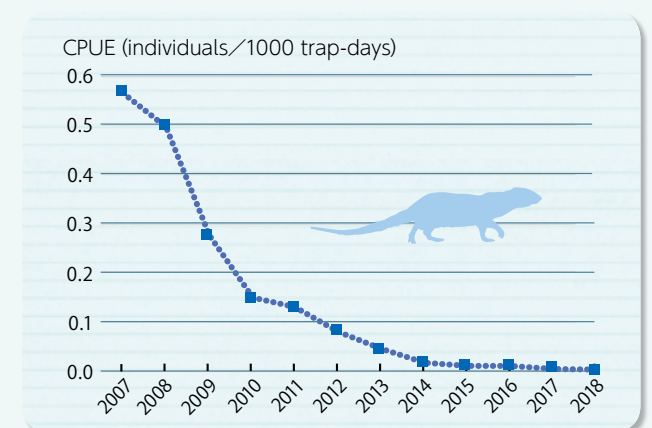
More than 32,000 mongooses have been captured on Amami-Oshima by 2018. The number of traps has increased significantly since 2005, when the Amami Mongoose Busters (AMB) started its activities. In contrast, the number of mongooses caught by the traps in a year has continued to decrease. CPUE (Catch per Unit Effort) is an indicator of population density of mongoose (animal heads per unit area). CPUE below shows the number of mongooses captured per 1,000 trap-days in each year. Spoken of as baseball, the trap-days is a number of times at bat, the capture of mongooses is a number of hits, and CPUE is a batting average. After commencement of the activities by AMB, CPUE shows the steady decrease of the mongoose population caused by the trapping.

Number of mongooses captured



Number of traps accumulated (sequential line in graph) is a total number of trap-days, which is calculated such as 100 traps setup by 10 days is 1000 trap-days. The trap-days has increased after AMB started its activities, and a total of more than 2 million trap-days were recorded every year from 2008 to 2020 fiscal year. The number of mongooses trapped (columns in graph) has decreased, and fall below of 100 trap-days from 2007, and finally was zero in 2019.

Change of CPUE



CPUE is an indicator of mongoose trapped per 1000 trap-days and shows their population density. Drastic decrease of CPUE suggests declined the mongoose population.

The eradication of mongoose was confirmed by scientific studies

There are few cases of eradication of medium size mammals in a fairly large island such as Amami-Oshima in the world. If we decide wrongly on the eradication of mongoose, the ecosystems on Amami-Oshima will be disturbed again by the animals, and the efforts spent until now will be fruitless. So that, AMB, MOEJ and scientists have made decision carefully to the eradication of mongoose. Conclusive evidence was the probability of eradication calculated from the monitoring data of trapping, sensor cameras and action of detection dogs. The probability shows 99% by the analysis, and the scientists board suggested that the decision of the eradication is a reasonable conclusion at the end of fiscal year 2023. MOEJ finally concluded the eradication to be reasonable judgement.

Trend of probability of eradication

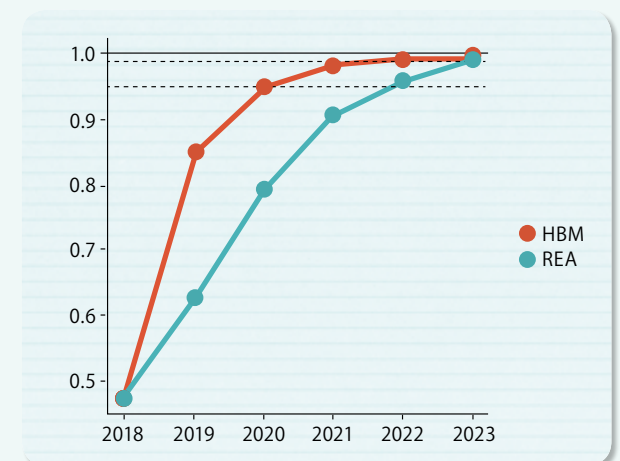


Figure shows the annual change of probability of eradication (PE) of mongoose on Amami-Oshima. The PEs was calculated from two simulations; HBM (Havest Based Model), which estimated local PEs in the Island, and REA (Rapid Eradication Assessment), which calculate population change. On March 2024, HBM showed 99.7% PE, and REA did 98.9% PE. (Source: Documents presented for the review committee for mongoose eradication project on Amami-Oshima in 2024)

Life recover their brilliance

Amami-Oshima Island is located in south-western part of Japan archipelago, in subtropical zone. It is warm year-round and there is a lot of rain. The biggest subtropical laurel forest in Japan, where Japanese chinquapin is dominant, spread in the Island, and supports rich biodiversity. The unique flora and fauna of the Amami-Oshima has developed because the Island has been isolated from outside the areas for millions of years. As a reflection of its distinctive natural environmental history, many globally precious and endemic species such as the Amami rabbit evolved in the Island. The rabbit keeps ancestor characters and

left from the Eurasian Continent to Amami-Oshima Island millions of years ago, when the Island was connected to the continent.

Amami-Oshima was listed to the Natural World Heritage site, as a cluster property of Amami-Oshima Island, Tokunoshima Island, Northern part of Okinawa Island, and Iriomote Island in 2021. The region is one of the world's biodiversity hotspot.

We must preserve the rich and diverse natural environment of Amami-Oshima for future generations.

Native mammals on Amami-Oshima are recovering their ranges

According to decline of mongoose population, native mammals are increasing their distribution areas on the Island. After the eradication of mongoose, the restoring of the native species will be accelerated.

Amami rabbit

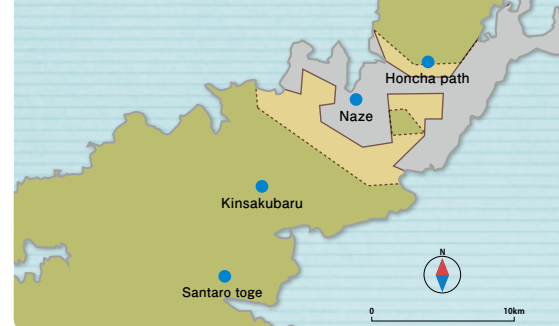
Pentalagus furnessi

This primitive rabbit is found only on Amami-Oshima and Tokunoshima. The Amami rabbit stays in burrows in daytime, and leaves there at night to eat seedlings and acorns.



Amami rabbit

2014 → 2023



Ryukyu long-haired rat

Diplothrix legata

The largest rat in Japan, and endemic to Amami-Oshima, Tokunoshima, and the northern part of Okinawa Island. It is arboreal, and mainly eats nuts and others on the trees. As name suggests that the rat have long fur of 6 cm on their backs.



Ryukyu long-haired rat

2018 → 2023



Amami spiny rat

Tokudaia osimensis

Endemic species to Amami-Oshima Island. The Amami spiny rats lack the Y chromosome (viz. XO-type sex chromosome) as same as the Tokunoshima spiny rats, a closely-related species of the rat. The rats are covered by spine-like hairs, and dodge attacks of the habu snakes. The rats mainly eat nuts of genus *Castanopsis* and other tree nuts.



Amami spiny rat

2018 → 2023



Mongoose free forest on Amami-Oshima

Animals on Amami-Oshima were afraid of the mongooses. According to increase of distribution of the mongooses released, the native animals, frogs, rats and other animals, have vanished from the areas. If the mongooses were left without no

actions, some species become extinct on the Island. The mongoose eradication project has saved these species from extinction. Now many animals are increasing their population, enlarging their ranges and recovering their former vivid lives.

Increasing of native birds on Amami-Oshima



Results of monitoring using sensor cameras

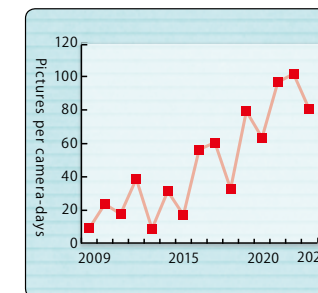
Figures below show historical changes of pictures taken rate of Amami thrush and Amami woodcock by sensor cameras (number of pictures taken per 1,000 camera-days). The figures suggest recovering of these birds according to decrease of the mongooses.



Amami thrush

Zoothera dauma major

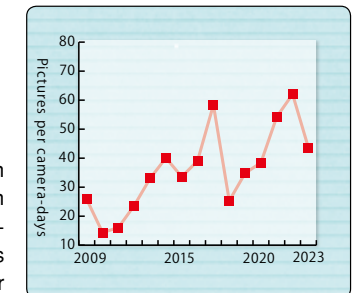
A large size thrush breeds in only primary lucidophyllous forest on Amami-Oshima. The birds eat insects, earthworms and fruits on ground.



Amami woodcock

Scolopax mira

The woodcock distributes on Ryukyu islands, and breed on Amami-Oshima and Tokunoshima. The birds inhabit in forests and eat earthworm and other small animals using their long bills.



Increasing endemic frogs on Amami-Oshima



Results of visual census

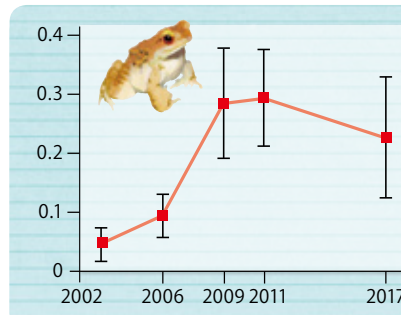
These figures show the number of animals observed while slowly driving along a 41.1 km long forest road at night on the Island. The vertical axis indicates the number of animals observed each year (conducted 4 times in a year), and the horizontal indicates the year of studies.



Otton frog

Babina subaspera

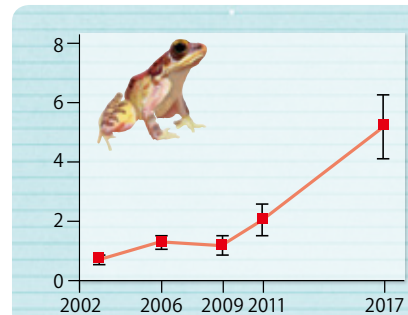
A large size frog inhabits only on Amami-Oshima (main island) and Kakeroma island (a neighbor island).



Amami tip-nosed frog

Odorrana amamiensis

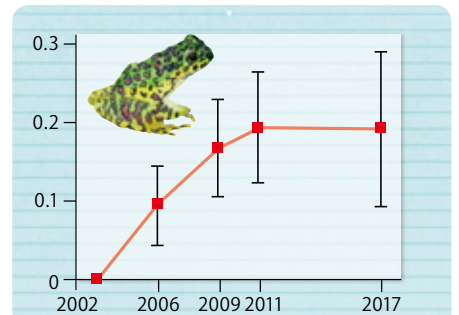
This frog has good jumping ability and inhabits only Amami-Oshima and Tokunoshima.



Amami Ishikawa's frog

Odorrana splendida

This frog is found only on Amami-Oshima, and has beautiful green color with gold spots.



Watari et al. (2013)modified

Conservation the nature of Amami-Oshima in future

Not only mongoose, continuous conservation action in future

The mongooses on Amami-Oshima were eradicated, but the animals still inhabit on Okinawa Island. There is possibility of that the mongooses on Okinawa are brought to Amami with cargos transported from Okinawa to Amami-Oshima. A new invasive alien species, white-lipped tree frog, was confirmed on Tokunoshima in 2023. Continuous monitoring is indispensable to prevent invasion of new alien species for conservation of the biodiversity on Amami-Oshima, Nature World Heritage site.

Action Plan for protection against invasion and colonization of mongoose

Ministry of the Environment Japan (MOEJ) has published "Action Plan for protection against invasion and colonization of mongoose on Amami-Oshima" in 2024. The plan indicates several stages for monitoring of invasion and immediate action for eradication of the mongoose.

Phase 1 Daily monitoring of invasion of mongoose

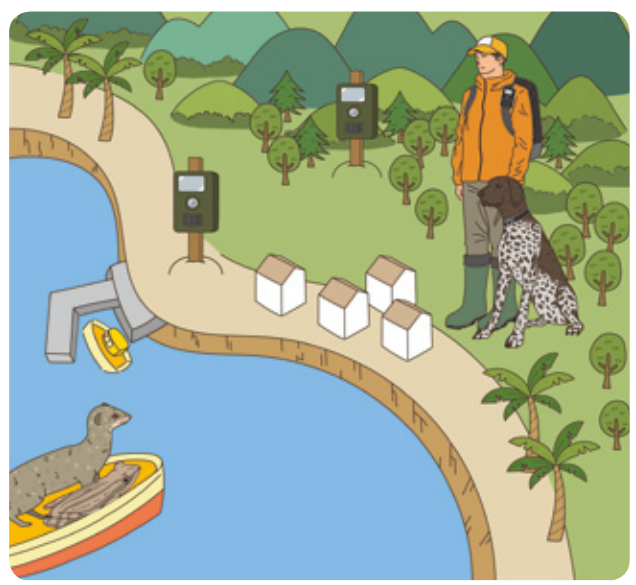
- 1 Public awareness for islander and information collection
- 2 Sensor camera monitoring
- 3 Patrol with detection dogs

Phase 2 When information on mongoose invasion is obtained

- 1 Confirmation of the information
- 2 Preparation for eradication action

Phase 3 If confirmed as new invasion of mongoose

- 1 Early extermination based on the experience of eradication on Amami-Oshima



On Amami-Oshima, do not bring mongooses into again, to prevent new invasion of alien species which give threats to the ecosystem, to make efficient use of the detection dogs and sensor cameras for continuous monitoring which were applied for the mongoose eradication project.

Press release :
Action Plan for protection against invasion and colonization of mongoose on Amami-Oshima



We prepare the following measures and monitor the mongoose invasion for implementation of the action plan.

- Continuous patrol and search of other invasive alien species (such as white-lipped tree frog) with the detection dog
- Monitoring of mongoose invasion in close coordination with the concerned government agencies



The mongoose, a major threat to the ecosystems of Amami-Oshima, was eradicated from the Island. But stray cat still remains and threaten the native animals on the Island. The stray cat is a capable hunter of mammals and birds than the mongoose, so that, removal of the stray cats on the Island is required.

Action plan for stray cat control for conservation of ecosystem

The stray cats (wandering cats outside of houses) are observed in deep in the mountains on Amami-Oshima. The sensor cameras, set-up for monitoring of the mongooses, record that the stray cats attack Amami rabbits and Amami spiny rats in mountain forest on the Island. The stray cat is the most dangerous predator on the Island, after the eradication of mongoose.



A cat prey on a Amami rabbit (left) and a Ryukyu long-haired rat (right)

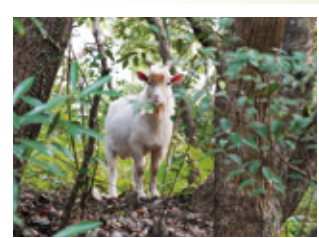
According to the action plan, the following activities are implemented on Amami-Oshima.

- Capturing the stray cats in forest
- Monitoring of the stray cats by sensor cameras
- Public awareness of appropriate keeping of house cats in village communities

Specific actions to reduce the feralization of house cats

- Enactment of a regulation for appropriate keeping of house cats(Duty for microtip insertion for identification and breeding limitation of the house cats)
- Support sterilization of house cats and TNR (Trapping, Neutering, and Return) for stray cats (Free the stray cats after sterilization)
- Public awareness for appropriate keeping of house cats

Control of other alien species for conservation of nature on the Island



Free-range goat

Capra hircus

Goats have been put out in sea-side area and increased their ranges into inland of the Island



Red swamp crayfish

Scapulicambarus clarkii

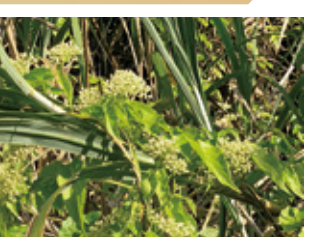
The crayfish, a specified alien species by the Act, are observed in Naze Kominato area in Amami city, and MOEJ conduct eradication program.



White-lipped Tree Frog

Polypedates leucomystax

This frog is observed on Tokunoshima in 2023, and related organizations conduct control program. The frog is not yet confirmed on Amami-Oshima, however, vigilance is required.



Boneset

Coreopsis lanceolata

An alien climbing plant makes colonies roadside on Amami-Oshima.