

Improvements of countermeasures for the decision-making process of invasive alien mammals

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[Abstract]

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The present study contributed to the development of various stages of control projects for invasive alien mammals. For this, we evaluated the feasibility of the control projects, constructed eradication probability models, and developed various control methods.

We used a model to determine the probability of mongoose eradication on Amami Oshima Island. Various parameters were included in the model. The mongoose eradication probability on Amami Oshima Island was evaluated using an area-based harvest-based model and rapid eradication assessment. The results showed that the eradication probability increased rapidly after the last detection of mongoose in FY 2018.

We developed a method for the eradication of native populations of Pallas' s squirrels, verified the effectiveness of chemical control, and established recommendations for the social implementation of non-native squirrel control. Furthermore, we compiled a manual for the control of Pallas' s squirrels.

We developed a decision support system that considers feasibility when dealing with raccoons. This system has been made available online and is accessible to government officials; it uses the number of animals captured per unit of effort as an indicator. Additionally, we explored the use of oral contraceptive vaccines as an innovative pest control method and evaluated potential antigens derived from the zona pellucida using live raccoons.

We identified instances of domestic/feral cat problems nationwide, evaluated existing countermeasures in problem regions, and proposed recommendations for countermeasures. As part of a nationwide case study, 101 bird species, including common ones, were found to be affected by domestic/feral cats. Furthermore, domestic/feral cats were the main factor contributing to the declining population of the Streaked Shearwater on Mikurashima Island, which is the largest breeding ground for the species.

We conducted a survey to establish a biosecurity system after mongoose eradication on Amami Oshima Island. The findings suggest that, following the eradication of mongoose on Amami Oshima island, the biosecurity system should use sensor cameras and search dogs for monitoring around the Naze-shinko port area.

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