

# Identification of Attractive and Aversive Sound Targeting Invasive Alien Species, Green Anole (*Anolis carolinensis*)

Principal Investigator: Noriko IWAI

Institution: Tokyo University of Agriculture and Technology

Saiwai-cho 3-5-8, Fuchu City, Tokyo, 1830054 JAPAN

Tel: 042-367-5504 / Fax: 042-367-5553

E-mail: iwain@cc.tuat.ac.jp

[Abstract]

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The green anole (*Anolis carolinensis*) is an invasive lizard in the Ogasawara Islands, Japan. It has had a negative impact on the native fauna, and as a result, eradication measures such as the use of sticky traps and PTFE-sheet fencing have been implemented. However, the effectiveness of these measures appears to be inadequate. Therefore, new methods are needed to either attract or deter this species. In this study, we investigated the use of attractive or aversive sounds to manage the invasive green anole (*Anolis carolinensis*) on the Ogasawara Islands, Japan. We first examined the response of green anoles to various sounds, including predatory sounds, prey sounds, breeding sounds, sounds under being predated, machine sounds, sounds of crumpling plastic bags, and alarm calls. Our results indicated that green anoles were particularly averse to the calls of *Buteo jamaicensis*. We then determined the appropriate sound volume and interval for playing the *B. jamaicensis* call and found that playing the sound at 90 dB with a 30-second interval was effective in repelling green anoles. To further enhance the aversive effect, we developed a novel sound by arranging *B. jamaicensis* call with other sounds. Our experiments showed that green anoles did not habituate to this arranged sound for at least four successive days. In addition, we conducted field experiments to evaluate the effectiveness of the *B. jamaicensis* call in preventing green anoles from escaping a cage or climbing an experimental rod. Although the results were not statistically significant, we observed a decrease in the number of individuals that climbed the rod with the aversive sound. Furthermore, we conducted additional experiments and found that green anoles showed a preference for walking on surfaces that are not blue and were attracted to live flies. Additionally, we observed that green anoles showed interest in a decoy of their own species. These findings may also be useful for managing green anole populations.

[References]

- 1) Shiho T, Sakai O, Iwai N (2022) Exploration of aversive bioacoustics for the effective management of invasive green anoles (*Anolis carolinensis*). Journal for Nature Conservation 68:126215.
- 2) Hiroyama K, Iwai N (2022) Examination of color preferences of invasive Green anoles in the Ogasawara Islands. Wildlife Society Bulletin 46:e1261.