

IV. 英文Abstract

Development of Management Techniques for Forest Ecosystem on Okinawa and Amami Islands as a Proposed World Natural Heritage Site.

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“Amami-Oshima Island, Tokunoshima Island, Northern part of Okinawa Island, and Iriomote Island” has been inscribed on the World Heritage List in 2021. We conducted the research project to contribute the comprehensive management plan for the World Heritage site. We contributed the zoning design for recovering the population of endangered Okinawa spiny rat, a critically endangered species endemic to the northern part of Okinawa Island or Yambaru area. Our research results showed that the distribution areas of three endemic bird species, Okinawa rail, Okinawa woodpecker, and Okinawa robin in Yambaru area have been recovering since the 2007 within the small Indian mongooses controlled area. The GAMM results showed that these bird species were abundant in areas with fewer small Indian mongooses and larger areas of hardwood forests. Thus, the mongoose had a negative impact not only on the flightless rails but also on the woodpeckers and the robins. In recent years, most of the old-growth forests have been designated as protected forests, and large-scale logging is no longer taking place in Yambaru. Eradication of the mongoose is particularly important for the conservation of these three endemic bird species. We investigated the epiphytic habit and distribution of *Dendrobium okinawense*, an endangered orchid in Yambaru (northern Okinawa), Japan. The presence of *D. okinawense* and its host *D. racemosum* with large diameter is a good indicator of the existence of old-growth forests containing endemic rare species in Yambaru. *Distylium racemosum* was considered one of the most useful indicator species because it can be easily identified in the field and its ecological characteristics are well documented. Tree-cavities are considered as key components that support multiple species, including endemic ones, in subtropical forests in Yambaru. In the Yambaru area, the preservation of large-diameter stems that will form tree-cavities is critically important for maintaining forest ecosystem health and should be considered when implementing forest management plans, especially for *D. racemosum*, which is rich in cavities and likely plays multiple ecological roles. It is important to unravel how invasive species impact native ecosystems in order to control them effectively. Cat management mainly involves trapping, but our findings show that educating local residents to stop feeding free-ranging cats and keeping pet cats indoors are also important.

[References]

- 1) T. YAGIHASHI, S.-I. SEKI, T. NAKAYA, K. NAKATA, and N. KOTAKA : Biological Invasions, 23, 2249-2260 (2021) , Eradication of the mongoose is crucial for the conservation of three endemic bird species in Yambaru, Okinawa Island, Japan. (IF: 3.1)
- 2) N. KOTAKA, J. PREBLE, K. SAITO, Y. TOGUCHI, M. KUDAKA, T. SAKODA and T. YAGIHASHI: Journal of Forest Research, 26, 192-200 (2021) , Recent nest tree use by the critically endangered Okinawa woodpecker in relation to forest age and two exotic forest pests. (IF: 1.3)

- 3) N. KOTAKA, M. YASUDA and T. SHIMADA: *Mammal Study*, 47, 2, 1–9 (2021) , Development of a Camera-Installed Nest Box for Small Mammals and Its Application in Reproductive Schedule Estimation for the Okinawa Spiny Rat. (IF: 0.7)
- 4) S. ABE, N. KOTAKA, A. TAKASHIMA, T. ABE, K. SAITO and T. MASAKI : *Ecological Research*, 33, 5, 1069–1073 (2018) Host selection and distribution of *Dendrobium okinawense*, an endangered epiphytic orchid in Yambaru, Japan (IF: 1.5)
- 5) T. ABE, T. KUDO, K. SAITO, A. TAKASHIMA and A. MIYAMOTO : *Journal of Forest Research*, 26, 181–191 (2021), Plant indicator species for the conservation of priority forest in an insular forestry area, Yambaru, Okinawa Island. (IF:1.3)
- 6) A. TAKASHIMA, A. NAKANISHI, M. MORISHITA, S. ABE, K. SAITO and N. KOTAKA: *Journal of Forest Research*, 26, 410–418 (2021), Tree-cavity formation in the mature subtropical forests of Yambaru, Okinawa Island. (IF: 1.3)
- 7) T. MAEDA, R. NAKASHITA, K. SHINOSAKI, F. YAMADA and Y. WATARI : *Scientific Reports* 9: 16200 (2019), Predation on endangered species by human-subsidized domestic cats on Tokunoshima Island. (IF:4.4)
- 8) Y. WATARI, H. KOMINE, E. ANGULO, C. DIAGNE, L. BALLESTEROS-MEJIA and F. COURCHAMP : *NeoBiota*, 67, 79–101 (2021) , First synthesis of the economic costs of biological invasions in Japan. (IF: 3.7)