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ตีพิมพ์ผลงานวิจัยระดับนานาชาติ Scopus

เรื่อง Genetic Monitoring of the Last Captive Population of Greater Mouse-Deer on the Thai Mainland and Prediction of Habitat Suitability before Reintroduction

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Genetic Monitoring of the Last Captive Population of Greater Mouse-Deer on the Thai Mainland and Prediction of Habitat Suitability before Reintroduction

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Abstract: Developing successful conservation programs for genetically depleted species is challenging. Survival and adaptive potential are related to genetic and habitat factors; therefore, conservation programs are designed to minimize risks associated with inbreeding and loss of genetic diversity. The greater mouse-deer (*Tragulus napu*) is a true forest species that contributes to seed distribution dynamics in forests. However, with continuous demographic decline over the last century in the wild, only captive populations of the greater mouse-deer remain on the Thai mainland. A restoration program initiated 20 years ago has increased their population to more than 100 individuals but maintaining high genetic diversity in a small captive population is crucial for successful recovery. Microsatellite genotyping and mitochondrial D-loop and *SRY* gene sequence analyses were performed to examine the genetic diversity and population structure in 123 greater mouse-deer (64 females and 59 males). Highly reduced effective captive population size with trends of inbreeding were observed. No historical bottleneck was observed. These conditions have reduced their reproductive fitness and ability to adapt to environmental change, increasing the risk of population decline and eventual extinction. Demographic analyses suggested a recent captive population expansion due to effective animal welfare and reproduction. The results also suggested that population size at equilibrium is the main factor of allelic diversity (number of alleles). Large habitat carrying capacity, representing each fixed captive population size can support the genetic diversity of greater mouse-deer. We also identified suitable habitat areas for reintroduction and long-term in situ conservation of greater mouse-deer using maximum entropy modeling. Based on the environmental variables, species distribution modeling for greater mouse-deer indicated lowland tropical forest regions in the Khlong Saeng-Khao Sok forest complexes as most suitable and requiring urgent habitat improvement. These

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