

Latrine-site use of small-clawed otters (*Aonyx cinereus*) in tropical rice fields

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学位論文概要

Dissertation Summary

学位請求論文 (Dissertation)

題名 (Title)

Latrine-site use of small-clawed otters (*Aonyx cinereus*) in tropical rice fields
熱帯地域の水田地帯におけるコツメカワウソ(*Aonyx cinereus*) の排糞場所利用

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Rice fields are known to serve as important habitats for aquatic and semi-aquatic wildlife. Owing to promotion of increased food production via agricultural modernization, changes in land use or farming practices have led to losses of aquatic and semi-aquatic organisms that use rice fields as foraging or refuge sites. The small-clawed otter (*Aonyx cinereus*) is an IUCN threatened species that uses rice fields as latrine sites and foraging habitats in South-east Asia. Thus, tropical rice field landscapes provide an opportunity to investigate how land-use and local environmental factors influence latrine-site use of this charismatic wildlife. Based on a year weekly field-survey and landscape analyses, we investigated latrine-site use by small-clawed otters in rice-field landscapes in West Sumatra, Indonesia. Using land-use and/or local environmental variables as predictors, we performed generalized linear model (GLM) or generalized linear mixed model (GLMM) analyses to explain the spatial patterns of latrine-site occurrence and spatial-temporal patterns of otter visitation to latrine sites. GLM analysis incorporating spatial patterns of latrine-site use revealed that a medium number of rice field huts was the single important factor explaining the occurrence of latrine sites in rice fields. Another GLM analysis incorporating spatial patterns of latrine-site use indicated that latrine sites that were adjacent to deep-water rice fields, distant from a settlement and close to river experienced the highest visitation by small-clawed otters. GLMM analysis incorporating temporal patterns of latrine-site use revealed that latrine sites that were adjacent to the vegetative stage of rice fields with abundant golden-apple snails (*Pomacea canaliculata*) and previously visited site experienced the highest probability of visit (or re-visit) by small-clawed otters. Based on these results, we formulate the following management implications of Indonesian rice fields with particular reference to conservation of small-clawed otters. First, given that a landscape containing an intermediate number of rice field huts was the important latrine site for small-clawed otters, moderate levels of rice farming activities are encouraged. Second, although the System of Rice Intensification (SRI), in which less water is used during rice cultivation, is being promoted in Indonesia to conserve water and maximize rice yield, such shallow-flooding practices may have detrimental effects on small-clawed otters; otter-friendly farming should be urgently designed and implemented in areas where SRI is promoted. Third, asynchronous farming practice may be encouraged to maintain landscape heterogeneity and consistent supply of foraging habitats for small-clawed otters. However, a trade-off between otter conservation and agricultural pest management needs to be scrutinized when designing otter-friendly farming practices or land-use planning.