Protect the Rhinoceros Beetle of Okinawa Island

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A subspecies of the Japanese rhinoceros beetle, Trypoxylus dichotomus septentrionalis, was recently discovered to have been introduced to the native habitat of another subspecies, T. d. takarai, in Okinawa. If the former subspecies were to expand its habitat, hybridization between two subspecies may proceed, and T. d. takarai may become extinct. This study was therefore conducted to clarify the precise characteristics of experimentally produced hybrids with the aim of developing an identification method for hybrid beetles. Morphological analysis showed that distinguishing between T. d. takarai and the hybrids was rather straightforward in both sexes. The emergence day of the adult beetles differed by about 2 weeks between the two subspecies, and the emergence day of the hybrid individuals was very close to that of the male parents. The difference in emergence time between the two subspecies seems to be an important factor in inhibiting hybridization. The results of the hatching rates and the larval survival rates suggested that the speciation of these subspecies progressed beyond the level of subspecies, and the possibility of hybridization seemed to be low. Finally, we developed an application to aid in the identification of the two subspecies and possible hybrids using the measurement data from this study, so that anyone can distinguish between the original subspecies and the hybrids. We also intend to help the T. d. takarai protection program by publishing this application.

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