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# Rewinding for rewilding: Suppressing the brown tree snake to reintroduce the endangered Guam kingfisher

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## Abstract

Plans to reintroduce the Guam kingfisher *Todiramphus cinnamominus* (Family Alcedinidae; Chamorro: Sihek) to its native range are under development. Historically limited to Guam in the western Pacific Ocean, the kingfisher was listed as endangered in 1984 and declared extinct in the wild in 1988. Its current population of about 140 individuals has been maintained by captive breeding on the mainland United States and Guam, beginning with 29 birds collected in 1984 and 1986. The invasive brown tree snake *Boiga irregularis* (Family Colubridae), native to parts of Australia, Indonesia, and Melanesia, is credited as the main driver of native wildlife species loss on Guam. With no known means to eradicate the snake, methods to suppress the brown tree snake population are being tested. One such method involves delivery by helicopter of dead neonatal mice bait laced with a toxicant that kills snakes, acetaminophen. Mice attached to small parachutes are deployed into treetops where snakes forage; treetop deployment also limits impacts to vulnerable non-target species on the forest floor. The hope is to reduce the snake population below a threshold that allows coexistence with native wildlife. There are possible confounding factors, so lessons learned from other native species reintroductions and other invasive species management programs will inform success of a future Guam kingfisher reintroduction. For instance, survival of reintroduced kingfishers might also hinge on mitigating other risks likely associated with the kingfisher extirpation in the first place and that are common threats to native species on islands, e.g., habitat degradation and other invasive species, such as rats and feral cats. Additionally, recent cases of new invasions following eradications, e.g., when mice become invasive subsequent to rat eradications, must be considered; we should anticipate surprising outcomes. Newly established invasive species can be transformative, as can reductions in populations of established invasive species responsible for generating transformative impacts. Will rewinding an impact recreate conditions favorable for reestablishing the kingfisher?

**Keywords:** brown tree snake, endangered species, Guam kingfisher, invasive species, rewilding

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