
Potential Giant tortoise rewilding on La Réunion: restoration of a recently extinct keystone ecosystem engineer

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Abstract

Until recently (past 175-3000 years) giant land tortoises on remote tropical and sub-tropical islands represented the last remaining relicts of reptile dominated ecosystems. Initial late-human discovery and settlement of island led to rapid extinction of giant tortoises worldwide: a) South Western Pacific (New Caledonia, Fiji, Vanuatu) 2000-3000yrs BP; b) Greater Antilles (Bahamas, Turk-Caicos, Cuba, Hispaniola) 900-4000yrs BP; and Western Indian Ocean (Mascarenes and Madagascar) 175-1000yrs BP. In the Mascarenes Human discovery in the early 16th century led to multiple extinctions of several giant tortoise species (endemic genus *Cylindraspis*) by the middle of the 19th century. The La Réunion Giant Tortoises (*Cylindraspis indica*) were extirpated by 1840. Yet, after almost two hundred years there remains a strong indigenous cultural attachment to tortoises, as evidenced by the importation and widespread husbandry of radiated tortoises (*Astrochelys radiata*) from nearby Madagascar. Recent efforts in the Seychelles to re-introduce the surviving Aldabra Giant tortoise (*Aldabrachelys gigantea*) to other granitic Islands in the Seychelles have been successful and are continuing. In Mauritius rewilding of Aldabra tortoises (as a proxy replacement for the extinct local forms) has proceeded on Round Island, Ile aux Aigrettes and Rodrigues over the past two decades leading to dramatic successes in native ecosystem restoration. Aldabra tortoises are currently being bred in numbers in captivity on La Réunion and are potentially available locally for experimental release (controlled/confined) in native or mixed native/alien ecosystems on the Island. We here evaluate alternative experimental protocols and potential sites for tortoise rewilding on La Réunion. Unlike any other accidental or intentional alien species introductions on Islands, giant tortoise rewilding is completely reversible if unanticipated environmental impacts prove detrimental.

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