



Are Purple Hermit Crabs (*Coenobita brevipanus*) Seed Dispersers or Predators?

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Alyssa Cepeda

Haldre Rogers, PhD , *Iowa State University*

Meg Kargul , *Iowa State University*

See next page for additional authors

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Are Purple Hermit Crabs (*Coenobita brevimanus*) Seed Dispersers or Predators?

Abstract

Vertebrate frugivores play an important role in forests by dispersing seeds and helping improve germination through gut passage. Some frugivores may also be seed predators, where the seed is destroyed through gut passage. On the island of Saipan, the native frugivores are birds, bats, and crabs. This experiment focused on purple hermit crabs, *Coenobita brevimanus*, which are known to consume fruits, but it is unknown whether purple hermit crabs disperse or predate the seeds they consume. A maximum of ten purple hermit crabs, ranging in size from medium to large individuals, were captured from the forest and kept in captivity. In captivity, they were fed native fruits including Premna (*Premna mariannarum* or *Premna pauloobarbata*), Ficus (*Ficus prolixa*), Aglaia (*Lansium parasiticum*), and Guamia (*Guamia mariannae*) and non-native fruits including papaya (*Carica papaya*) collected in the wild. The cage was inspected to see if fruits were consumed but the seeds were not ingested, and the fecal matter was searched for damaged seeds (crushed or in pieces) or undamaged seeds (whole or intact). Analysis of predation or dispersal was done using logistic regression. It was hypothesized that purple hermit crabs are beneficial seed dispersers, passing most seeds unharmed for both native and non-native fruiting tree species. As beneficial frugivores, purple hermit crabs could play a significant role in dispersing seeds in the forests of Saipan.

Keywords

frugivores; seed dispersers; karst forest; hermit crab

Cover Page Footnote

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Authors

Alyssa Cepeda; Haldre Rogers, PhD; Meg Kargul; and Anthony Castro



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School of Public Health
University of Nevada, Las Vegas

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Alyssa Cepeda
Haldré Rogers, PhD, Iowa State University
Meg Kargul, Iowa State University
Anthony Castro, Iowa State University
Coordinating Center: University of Hawai'i at Manoa

ABSTRACT

Vertebrate frugivores play an important role in forests by dispersing seeds and helping improve germination through gut passage. Some frugivores may also be seed predators, where the seed is destroyed through gut passage. On the island of Saipan, the native frugivores are birds, bats, and crabs. This experiment focused on purple hermit crabs, *Coenobita brevipanus*, which are known to consume fruits, but it is unknown whether purple hermit crabs disperse or predate the seeds they consume. A maximum of ten purple hermit crabs, ranging in size from medium to large individuals, were captured from the forest and kept in captivity. In captivity, they were fed native fruits including *Premna* (*Premna mariannarum* or *Premna paulobarbata*), *Ficus* (*Ficus prolixa*), *Aglaia* (*Lansium parasiticum*), and *Guamia* (*Guamia mariannae*) and non-native fruits including papaya (*Carica papaya*) collected in the wild. The cage was inspected to see if fruits were consumed but the seeds were not ingested, and the fecal matter was searched for damaged seeds (crushed or in pieces) or undamaged seeds (whole or intact). Analysis of predation or dispersal was done using logistic regression. It was hypothesized that purple hermit crabs are beneficial seed dispersers, passing most seeds unharmed for both native and non-native fruiting tree species. As beneficial frugivores, purple hermit crabs could play a significant role in dispersing seeds in the forests of Saipan.

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