



Nui Chua stick insect

(Nuichua rabaeyae)



Joining forces to save Vietnam's species
EAZA Campaign 2024-2025





General Introduction

Vietnam is one of the global hotspots of biodiversity and is a megadiverse country. Discoveries of new species are regularly reported from it. Biodiversity knowledge of invertebrates is certainly poor.

Biology

The Nui Chua stick insect was only scientifically described in the year 2018. The species was named after Kristien Rabaey in acknowledgement for her breeding of the F1 generation of this species after the live collection (except one male) was lost in an accidental domestic fire. The species was not only described as a new species but also as a new genus to science. The genus name is derived from Nui Chua National Park in Ninh Thuan Province, southeast Vietnam. So far it is only known to inhabit Nui Chua National Park.

Nui Chua National Park covers about 24,500 ha and ranges from sea level up to 1,039m on Mount Nui Chua. Situated along the coast of southern Central Vietnam, Nui Chua National Park also protects a marine area with several beaches where different species of sea turtles have their nesting grounds. The higher portion (> 400m) of the park is covered in evergreen tropical rainforest, while the lower portion is either used for agricultural purposes by local tribes or has vegetation dominated by thorny trees and bushes. This latter habitat is generated by a hot and dry microclimate and is completely different compared to most areas of Vietnam. This isolates the rainforests on the mountain of Nui Chua N.P. from the other rainforest areas of Kon Tum Plateau in the Central Highlands.

The species was collected in secondary evergreen rainforest, at low altitude (400m). The stick insects were found foraging on low vegetation and bushes. The medium sized, colourful species is green and reddish-brown. The head is blueish green with small black warts. The Nui Chua stick insect is nocturnal.



It is easy to rear in captivity and accepts a wide variety of alternative foodplants including *Hypericum* spp., *Hedera helix* and different species of *Rubus* spp. Eggs are dropped to the ground, about 10 eggs per female per week, and have a relatively short incubation time (2–4 months at 20 - 23 ° C). Nymphs can react hectically when disturbed, but older nymphs often feign dead. Males mature 4 to 6 weeks earlier than females and are considerably smaller in size than the latter, reaching only about half their length: the length of females can reach 13 cm, males are around 6 cm. In general, stick insects are longish and mimic plant parts using camouflage as an anti-predator mechanism.

As soon as the male Nui Chua stick insects become adults, they occupy the larger female nymphs and remain with them for the rest of their life.

Subadult females moult with males still attached to the old skin. Once the moulting process is completed, the male moves from the old skin to the freshly moulted adult female. When a lone male comes close to an occupied female or even when two mating males come close to one another, they become agitated and instantly try to fend off the contender with their legs.

The sexual dimorphism in terms of size observed in *Nuichua rabaeyae* sp. nov. with the males being almost 50% shorter than females, is very strong. A hypothesis for this sexual dimorphism may be related to sexual selection in connection to the behaviour where males, who reach adulthood first, mate with and keep subadult females.

This process may have induced the selection of the fastest growing males, i.e., those reaching maturity with the smallest size. This hypothesis is further supported by the fact that the male remains attached to the same female for all his life.



Status

Knowledge of the Nui Chua stick insect is still poor. So far, the stick insect is known to inhabit a very restricted forest area along the coast of southern Vietnam. As it has only been located in a small area, the size of the population most probably is limited. Forest destruction certainly has a negative impact for the species, as it is a forest-dweller. Currently, it is regarded to represent a microendemic species. It is not included in the IUCN Red List of Threatened Species.

Regular surveys of the wild population are not currently being carried out, and there is a near-total lack of knowledge of the population status and trends. Everything which is known today goes back to the original description from 2018 or derives from breeding reports outside the natural range. The species is not only kept and bred by private hobbyists but also by zoos, such as Cologne Zoo, Germany.

The first rapid surveys conducted by the Southern Institute of Ecology (SIE), Nui Chua National Park, Institute of Ecology and Biological Resources (IEBR), together with Cologne Zoo, in August 2023 revealed only few phasmid records at the type locality, in forested areas between 400 m (altitude of the type locality: mixed vegetation area consisting of dry and evergreen forest) and 700 m (altitude of the camping site of the original expedition, during which the new species was discovered: evergreen forest).

These records comprised a total of six stick insect individuals, representing four distinct species. However, none of them were revealed to be *Nuichua rabaeyae*, which thus might be more difficult to find, rare or active during another season. Thus, further surveys across various months of the year, and covering different geographical and forested areas are deemed to be necessary to better understand the distribution, population size, behavior, and abundance patterns of *Nuichua rabaeyae* and thus to find out whether it is in fact rare and threatened.



Conservation action

Habitat protection certainly will benefit from the co-existence of the Nui Chua stick insect with the silver-backed chevrotain, a deer-like species that is the size of a rabbit, that was rediscovered recently within dry lowland forest in the region. Successful institutional breeding has happened repeatedly at Cologne Zoo, which has already provided surplus to other zoological institutions in Germany / Europe to extend the conservation breeding network.

Campaign objectives

To build up conservation measures together with the partners Southern Institute of Ecology (SIE), Nui Chua National Park, Institute of Ecology and Biological Resources (IEBR), the EAZA Vietnam campaign will foster:

- Population monitoring, and if in fact microendemic and threatened, then:
- Vietnam Red Data Book inclusion;
- IUCN Red List inclusion;
- Build up of conservation breeding in Vietnam;
- the extension of the European captive breeding program, viz. advertise for more participating zoos and thus more breeding successes;
- Site-specific conservation in combination with silver-backed chevrotain.



Nui Chua stick insect (*Nuichua rabaeyae*) at the Cologne Zoo. Phot. T. Ziegler