Thaiszia - J. Bot., Košice, 35: 042–047, 2025
https://doi.org/10.33542/TJB2025-2-01

THAISZIA
JOURNAL OF BOTANY

# Unexpected species of *Anthurium* at the Seibal archaeological site (Guatemala) as a possible trace of Maya long-distance trade

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Studnička M. (2025): Unexpected species of *Anthurium* at the Seibal archaeological site (Guatemala) as a possible trace of Maya long-distance trade. – Thaiszia – J. Bot. 35: 042–047.

*Abstract*: Three archaeological sites of Maya structures close to one another, namely Cahal Pech (Belize), Seibal and Tikal (both Guatemala), have been examined as habitats of epiphytic or petrophytic species of the genus *Anthurium* (Araceae). *A. schlechtendalii* Kunth is found in the area and is a species common in Maya ethnobotany. Nevertheless, a large naturalised population of the very similar but larger species *A. salvinii* Hemsley has been detected in Seibal. This site is separate and geographically isolated from the natural habitats of *A. salvinii* in Guatemala. This phenomenon elucidates a possible ethnobotanical trace of Maya long-distance trade in pre-Columbian history.

*Keywords*: archaeological site, Guatemala, Maya, ethnobotany, pre-Columbian, *Anthurium*.

## Introduction

The Classic Maya period is well-known thanks to archaeological sites with temples located in southern Mexico, Guatemala, Belize, and Honduras. Many artefacts provide information about long-distance trade in this area. For example, the origins of obsidian and jade were established to have been very distant from the site of excavations based on chemical parameters and colour (Mrázek 2024; Sidrys 1976). Zooarchaeological methods even revealed trade in animals, since these were found outside their natural geographical areas or suitable environments (Thornton 2011). I myself have found a surprising botanical phenomenon in Seibal (known as El Ceibal in Spanish), an archaeological site from the Classic period of the Maya civilisation

located in Petén, the north-eastern department of Guatemala. A description of this phenomenon and its possible ethnobotanical substance is the topic of the following short note.

## Methods

Natural and anthropogenic biotopes of two species of bird's nest *Anthurium* (Araceae) were documented in two archaeological sites in north-eastern Guatemala and in one site nearby in Belize.

Leaves of five accessible adult (fertile) specimens found in a large naturalised population of the markedly larger *Anthurium* in Seibal (in comparison with specimens of *Anthurium* at other sites) were examined in detail. Their leaf blades were measured and the veins per side were counted (Fig. 1). These parameters were compared with morphological descriptions and data in literature to classify the species.

## Observation in Seibal and two contiguous archaeological sites

In March 2019 I visited Seibal and Tikal, both in Guatemala, as well as Cahal Pech, a remarkably similar site in adjacent Belize (Awe 2013; Helmke & Awe 2012). My interest focused on the surrounding vegetation and flora, namely epiphytes. In both Tikal and Cahal Pech I found populations of one bird's nest *Anthurium* (Bown 2000), namely *A. schlechtendalii* Kunth, a species widely distributed in Central America, especially in Belize and Guatemala. This species is of ethnobotanical significance in the Maya tradition. It was known as a healing plant by the Maya people in pre-Columbian times as well as at present (Balick & Arvigo 2015; Hitzinger 2016). It is also an object of interest and examination in modern pharmacology (Carvajal-Zarrabal et al. 2017; Stark et al. 2009).

Today one can find this *Anthurium* species growing epiphytically or terrestrially in tropical rainforests surrounding ancient buildings (Fig. 6, 7) – sometimes even directly on sanctuary ruins (Fig. 2, 3) – and transplanted in the ground as ornamental plants after probably being brought from trees cut down during excavation work (Fig. 4, 5).

In Seibal I took some photographs of plants that seemed to be particularly luxurious examples of *A. schlechtendalii*. Another similar species, *A. salvinii* Hemsley, which is larger, is stated to be part of the flora of Guatemala. Pendant inflorescences of this peculiar *Anthurium* on my photographs from Seibal denoted just *A. salvinii* (Fig. 5). Nevertheless, according to Croat (1991: 718), '*Anthurium salviniae*[1] ranges from western Mexico (Chiapas), along the Pacific slope of Guatemala'. Thus, it should not be found in north-eastern Guatemala. *A. schlechtendalii* is the correct species in the area of interest, but I had to consider the occurrence of *A. salviniae* as alien and uncertain.

[1] The name was later orthographically modified (according to IPNI).

**Fig. 1 Measurement of *Anthurium salvinii* in Seibal (photo by R. Novotná).**

**Fig. 3 Specimens of *Anthurium schlechtendalii* in Cahal Pech settled on a Mayan pyramid.**

**Fig. 5 A transplanted giant specimen of *Anthurium salvinii* in Seibal.** The person is 165 cm tall.

**Fig. 7. *Anthurium salvinii* in Seibal growing terrestrially in the rain forest surrounding ruins.**

**Fig. 2 *Anthurium schlechtendalii* in Tikal. A habitat in ancient ruins.**

**Fig. 4 A typical specimen of *Anthurium schlechtendalii* transplanted within the archaeological site of Cahal Pech.**

**Fig. 6. *Anthurium salvinii* in Seibal growing naturally as an epiphyte.**

**Tab. 1 Diacritical morphological features of *Anthurium schlechtendalii* versus *A. salvinii* according to Croat (1991) and parameters ascertained in *A. salvinii* in Seibal.**

| Morphological feature → Species ↓ | **Leaf blade length [cm]** | **Number of lateral leaf veins per side** | **Inflorescence position** |
|---|---|---|---|
| ***A. schlechtendalii* (Croat 1991)** | 30–140 (175) | 15–16 | erect to spreading |
| ***A. salvinii* (Croat 1991)** | 39–180 | 9–24 | usually pendant |
| ***A. salvinii* (examined in Seibal)** | 175–192 | 22–26 | pendant |

Therefore, I made a second expedition to Seibal in November 2019 to examine the morphological characteristics of the dubious *Anthurium*. Unfortunately, the typical cucullate cataphylls (bracts protecting a bud) were wizened and unusable as a distinguishing feature between *A. salvinii* and *A. schlechtendalii*. However, further distinguishing features are unquestionable (Tab. 1). I found a large population of *A. salvinii* in Seibal, but no examples of *A. salvinii* in Tikal (85 km from Seibal) or in Cahal Pech (125 km from Seibal). The site in Seibal is geographically isolated from the species habitat in Mayan countries (Fig. 8).

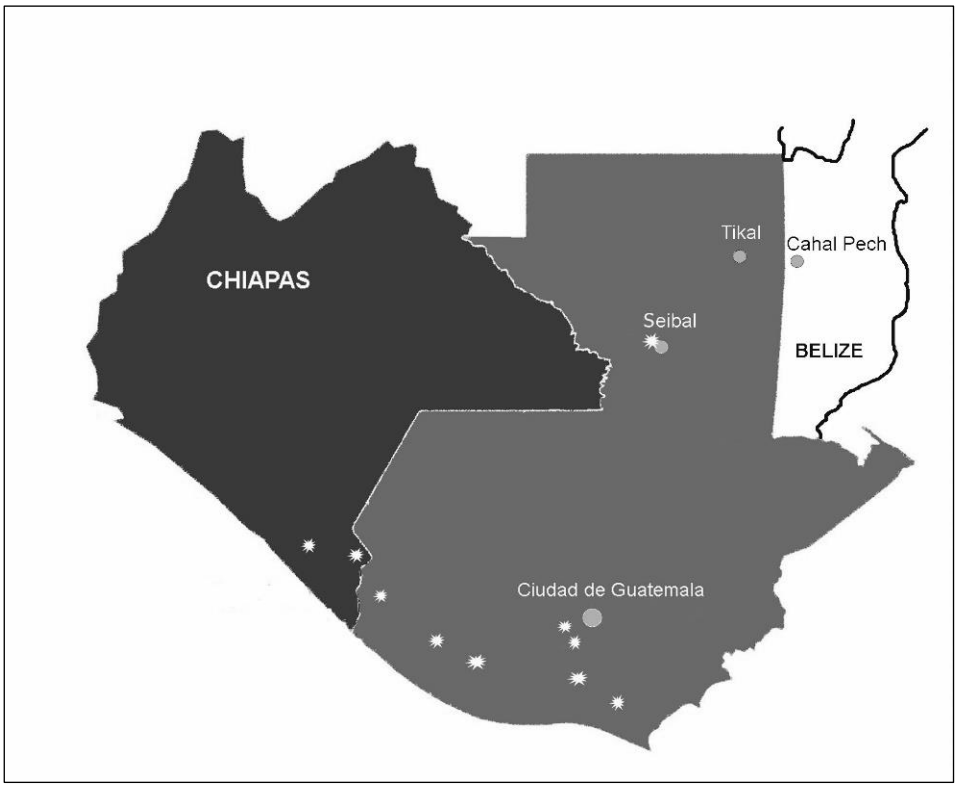


**Fig. 8 The position of the three explored archaeological sites. Asterisks = habitats of *Anthurium salvinii* according to Croat (1991). Seibal is the questionable isolated habitat.**

## Discussion

The described phytogeographical anomaly hardly has a natural cause. The Seibal site is isolated by a hiatus greater than 200 km from all known Mexican, Guatemalan and Honduran localities of *A. salvinii* (Tropicos 2025).

The seeds and red berries of *Anthurium salvinii* are dispersed by birds but transfer across such a long distance from west to east is quite unlikely based on ecological knowledge (e.g. Rost et al. 2015; Vianna et al. 2013, etc.). There is also no river that could bring plant diaspores, not even the relatively nearby Pasión River. We can also exclude any introduction of *A. salvinii* to Seibal in recent times, as the population of the species in the rain forest surrounding the ruins is fully naturalised. A population of such species with long-lasting development needed centuries to proliferate. However, *A. salvinii* was not found at other archaeological sites visited, as they may have been isolated in terms of trade. Mayan kingdoms were often antagonistic. They were centers of power with specific histories.

Both examples of bird's nest *Anthurium* are frequently grown terrestrially as ornamental plants by contemporary Guatemalans. Perhaps it is an expression of tradition and mentality. However, ethnobotany does not have enough detailed knowledge to really know whether the Maya of the Classic period could distinguish between closely related and morphologically very similar species described today as *A. schlechtendalii* and *A. salvinii*.

Other authors have also previously presented evidence that the Maya in the Classic period were not only farmers and that contemporary Maya growers of various ornamental, utilitarian, or medicinal plants are simply continuing an ancient tradition (Chase & Chase 1983; Neulinger et al. 2013). The logical deduction is that seeds, cuttings, or rhizomes of a large number of desirable species were already spread among people in ancient times. These are interesting findings that can be taken into account in the case of anomalous occurrence of *A. salvinii*.

## Conclusions

Epiphytes (occasionally petrophytes) known as bird's nest *Anthurium* are transplanted and cultivated by Guatemalans as interesting medicinal and ornamental plants, which is probably not a new phenomenon. Two species of bird's nest *Anthurium*, namely *A. salvinii* and *A. schlechtendalii*, found at archaeological sites should be considered as possible relics of cultivation in the Maya Classic period. The isolated habitat of *Anthurium salvinii* in the Seibal ruins (Guatemala) could have its origins in long-distance trade during the Classic period.

## Acknowledgement

The author is grateful to the leader of our expedition (of members of different interests) Ms Barbora Pačesová, who organised (with difficulty) the time needed for our botanical research of these sites. Special thanks go to Mrs Regina Novotná (Liberec Botanical Gardens, Czech Republic), the cooperating assistant during the documentation of the *Anthurium* specimens in their biotopes.

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Received: May 20th 2025
Revised: September 16th 2025
Accepted: September 24th 2025