



## *Acilepis nakhonphanomensis* (Asteraceae), a new species from Northeastern Thailand

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(Manuscript received 25 July 2022; Accepted 21 October 2022; Online published 2 November 2022)

**ABSTRACT:** *Acilepis nakhonphanomensis* Chatan & Promprom, a new species in the Sunflower family (Asteraceae) from northeastern Thailand, is described and illustrated. It mainly differs from other previously known similar *Acilepis* species by the receptacle, leaf blade margin, involucre, floret, corolla tube, anther, style, and achene. Colour illustrations, line drawings, distribution map, and morphological comparisons with its allied species are provided. The conservation status of the new species was also assessed.

**KEY WORDS:** *Acilepis ngaoensis*, Aster family, flowering plant, plant diversity, plant taxonomy.

### INTRODUCTION

*Acilepis* D. Don is a genus in the Sunflower Family (Asteraceae) (Don, 1825). Approximately 38 *Acilepis* species have been proposed, and ca. 32 accepted names are recognized (The Plant List, 2013). *Acilepis* is mainly distributed in India and Southeast Asia (Bunwong *et al.*, 2014; Koyama *et al.*, 2016). The genus *Acilepis* is defined as a perennial herb with simple and alternate or rosulate leaves, discoid capitula, phyllaries more than 4-seriate, 5-lobed and radial symmetry corolla, and biseriate bristle pappus with a short outer series. Seventeen species were recognised in the most recent revision in Thailand (Bunwong *et al.*, 2014; Koyama *et al.*, 2016).

From 2017 to 2021, the authors undertook fieldwork in many national parks in North-Eastern Thailand, including Phu Pha Yol National Park, Nakhon Phanom Province. This National park is very interesting because some new species have been found in the last five years (Chatan and Promprom, 2018; Promprom and Chatan, 2020). Many flowering plants, including *Acilepis* specimens, were collected for study. After the authors studied some *Acilepis* specimens from the herbarium specimens and information on living plants and compared them to the morphology of other previously known species, the authors concluded that these could not be referred to as any previously-named species. Here, the new species, namely *A. nakhonphanomensis*, is described and illustrated.

### MATERIALS AND METHODS

The herbarium specimens of *Acilepis* were studied with a stereomicroscope. Measurements of only fully mature plants were made using a digital calliper ruler. Living plants in the field were examined, and some plants

from the field trip planted in the author's home garden were carefully observed. Species identification or morphological descriptions were based on living specimens and the herbarium collections of BK and BKF. The study also consults the protologue of similar species, *A. ngaoensis* (H. Koyama) H. Rob. & Skvarla (Koyama, 2004) and related literature (Robinson and Skvarla, 2009; Bunwong *et al.*, 2014; Koyama *et al.*, 2016) and herbarium specimens kept in main herbaria in Europe and Thailand, including AAU, BK, BKF, K, and P. Preliminary conservation status assessment followed the IUCN Standards and Petitions Committee (2022) criteria.

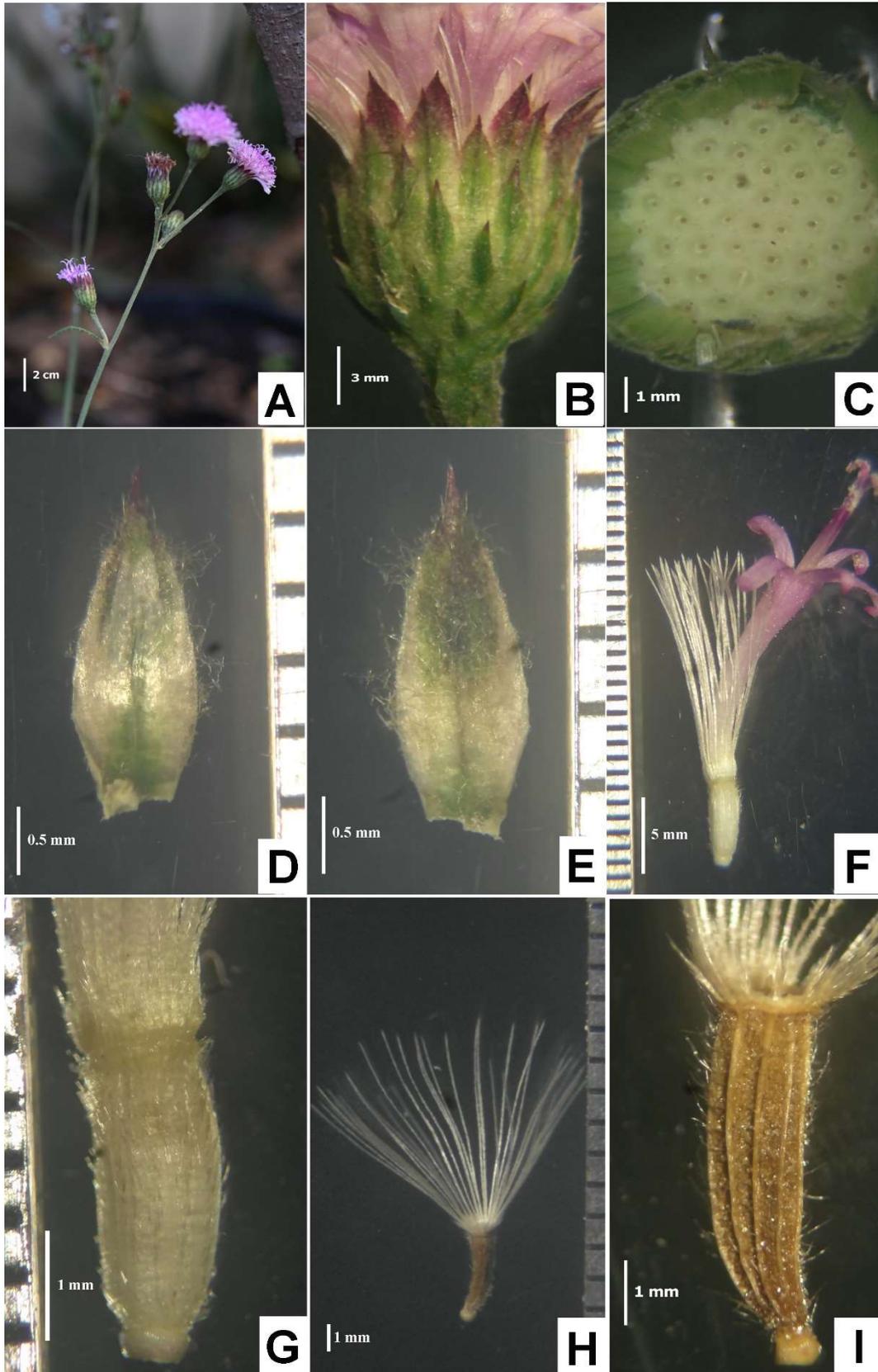
### TAXONOMIC TREATMENT

*Acilepis nakhonphanomensis* Chatan & Promprom, *sp. nov.* **Figs. 1–3**

**Type:** THAILAND. Nakhon Phanom Province: northeastern Thailand, Phu Pha Yol National Park, 300–400 m elev., 16°53'23.5"N 104°15'30.8"E, 18 Dec. 2017, *W. Chatan 2642* (holotype, BKF!; isotype, BK!).

**Diagnosis:** The new species differs from *A. ngaoensis* (H. Koyama) H. Rob. & Skvarl by its inconspicuously ribbed stem, indistinctly serrate leaf blade margin, glabrous receptacle, subcoriaceous involucre, slightly tubular corolla tubes, obtuse appendage and cordate base of anther, and the longer anther, style and achene.

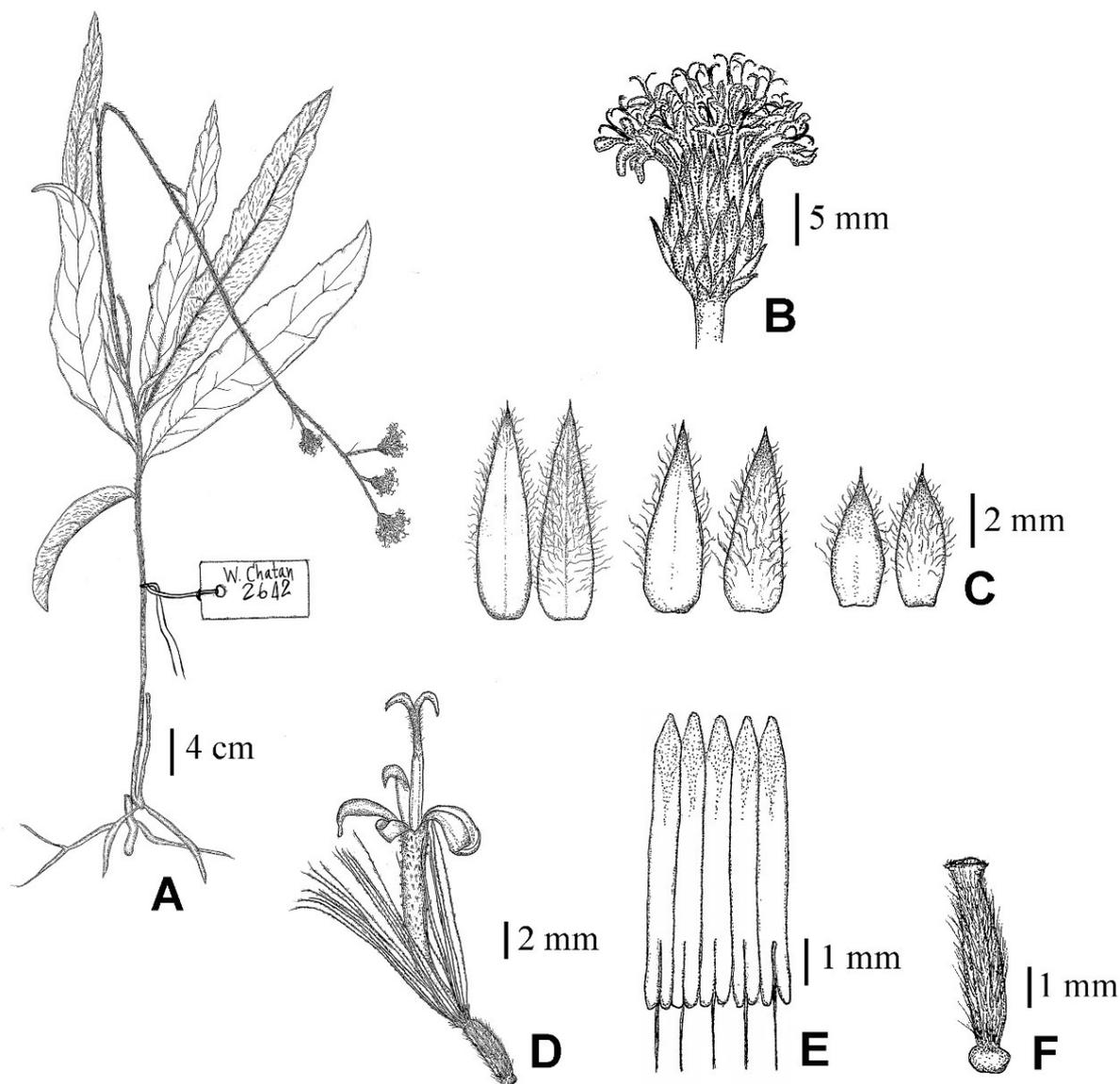
**Description:** Perennial herbs, 40–80 cm tall. Stems erect, inconspicuously ribbed, scabrous with slightly dense whip-shaped hairs and capitate glands. Root thick, surface pale brown. Leaves simple, alternate, cauline; blade 5–21 by 1.4–5.0 cm, mostly elliptic, linear or rarely oblanceolate, margin indistinctly serrate, apex obtuse, acute to acuminate, base cuneate, subcoriaceous; adaxial side glabrescent, except for few and minute whip-shaped hairs and capitate glands on midrib, lateral vein and veins;



**Fig. 1.** Morphology of *Acilepis nakhonphanomensis* Chatan & Promprom. **A.** inflorescence. **B.** involucre. **C.** receptacle. **D.** adaxial side of phyllary. **E.** abaxial side of phyllary. **F.** floret. **G.** ovary. **H.** Achene. **I.** achene (magnified).

**Table 1.** Morphological differences amongst *Acilepis nakhonphanomensis* and *A. ngoensis*.

Character	<i>A. nakhonphanomensis</i>	<i>A. ngoensis</i>
Stem	Inconspicuously ribbed	Conspicuously ribbed
Leaf blade	Mostly elliptic or linear or rarely oblanceolate, apex obtuse, acute to acuminate, indistinctly serrate margin	Elliptic or oblanceolate, apex acuminate, distinctly serrate margin
Petioles	2–7 mm long	Up to 10 mm long
Capitulescences	Solitary, in pairs or loosely paniculate	Solitary or loosely paniculate
Capitula	15–20 mm long	10–20 mm long
Receptacle	Glabrous	Hairy
Involucres	In 5–7 series, 5–14 mm long, subcoriaceous	In 6–7 series, 10–15 mm long, herbaceous
Florets	40–60	Ca. 80
Corolla tubes	Slightly tubular	Funnelform
Anthers	6.0–6.5 mm long, apical appendage obtuse, base cordate	3.5–4 mm long, apical appendage acute, base obtuse
Styles	12–15 mm long, branches 1.2–1.8 mm long	7–9 mm long, branches 3–3.5 mm long
Achenes	5.0–5.5 mm long	3–4 mm long

**Fig. 2.** Morphology of *Acilepis nakhonphanomensis* Chatan & Promprom. **A.** habit. **B.** inflorescence. **C.** phyllaries (from left to right: the first, third and fifth ones are adaxial sides; the second, fourth and sixth ones are abaxial sides). **D.** floret. **E.** stamen. **F.** achene (pappus removed). Drawn by Wannachai Chatan.

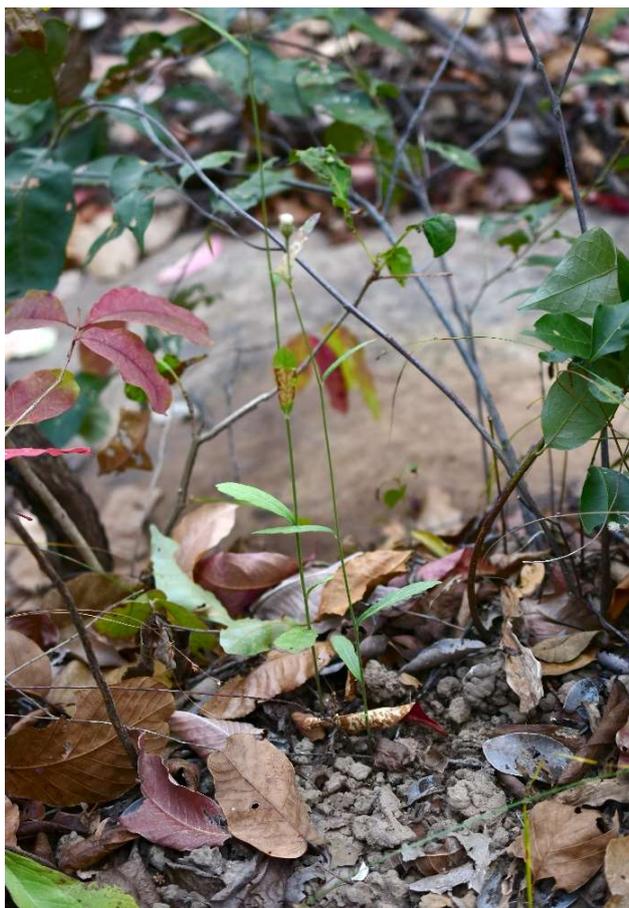


Fig. 3. Habit and habitat of *Acilepis nakhonphanomensis* Chatan & Promprom

abaxial side scabrous with slightly dense whip-shaped hairs and capitate glands on midrib, lateral vein and veins, other surfaces sparse hairs; lateral veins 8–11-paired; petioles 2–7 mm long. Capitulescences terminal or axillary, solitary, in pairs or loosely paniculate. Capitula campanulate or cup-shaped, 10–20 mm long, pedunculate. Peduncle 0.5–3.4 cm long. Receptacle flat, glabrous; 0.45–0.55 mm diam. Involucre campanulate or cup-shaped, in 6–8 series, 5–14 mm long, subcoriaceous. Phyllaries light green or purple apically, 5–10 × 2.5–3.5 mm long, margin piliferous, adaxial side glabrous excepting for arachnoid hairs near apex, abaxial side arachnoid and glandular capitate the outer and the middle ones ovate or lanceolate, apex spinose; the inner ones lanceolate, oblong or narrowly oblong, apex apiculate. Florets 40–60; corollas slightly tubular, moderately to pale purple, glandular outside; corolla tubes 7–8 mm long; corolla lobes 3–4 mm long. Anthers 6.0–6.5 mm long, apical appendage obtuse and purple, base cordate. Ovary cylindrical or subcylindrical, 10-ribbed, 4–5 mm long, 1.0–1.5 mm diam., dense hairs and few glands on the surface, base obtuse. Styles purple, 12–15 mm long, branches 1.2–1.8 mm long. Achenes subterete or clavate,

5.0–5.5 mm long, 1.0–1.2 mm diam., 10-ribbed, apex concave, surface with scattered gland and hairs; Pappus in two series, white; inner series of capillary bristles, 8–9 mm long, ca. 25–30 capillaries per achene; shorter than corolla, longer than involucre bracts; outer ones ca. 1 mm. long.

**Other specimen examined (paratypes):** THAILAND, Nakhon Phanom Province, Northeast of Thailand: Phu Pha Yol National Park, 29 August 2021, *W. Chatan 3496* (BKF).

**Phenology:** Flowering in September–February and fruiting in December–March.

**Distribution and Ecology:** *Acilepis nakhonphanomensis* is restricted to the Phu Pha Yol National Park. The new species grows on rocky and dry soils in slightly shaded and shaded areas in the deciduous dipterocarp forest, mixed deciduous forest, and dry evergreen forest at an elevation of 300–400 m (Fig. 4).

**Etymology:** The epithet references the Nakhon Phanom Province, Thailand, the locality where the species was collected and is, until now, endemic.

**Vernacular name:** Muang Nakhon Phanom.

**Preliminary Conservation status:** We consider this species to be Critically Endangered (CR) according to the IUCN Standards and Petitions Committee (2022). (The Extent of Occurrence (EOO) is less than 100 km<sup>2</sup>; the Area of Occupancy (AOO) is less than 10 km<sup>2</sup>; one population was found; a continuing decline in the number of mature individuals was observed.)

**Note:** *Acilepis nakhonphanomensis* is similar to *A. ngaoensis*. The latter is endemic to Thailand and found in Ngao Waterfall, Namtok Ngao National Park, Muang District, Ranong Province, Peninsular of Thailand (Koyama, 2004; Robinson and Skvarla, 2009; Bunwong *et al.*, 2014; Koyama *et al.*, 2016). The similarities of morphological characters composed of the high number of florets in long pedunculated capitula (40 florets or higher) at the leaf axil or the terminal of the stem or branch and not reflexed phyllaries with sparsely arachnoid hairs on both surfaces. However, *A. nakhonphanomensis* differs from *A. ngaoensis* by the inconspicuously ribbed stem, mostly elliptic or linear or rarely oblanceolate leaf blade with indistinctly serrate margin (vs. elliptic or oblanceolate with distinctly serrate margin), glabrous receptacle (vs. hairy), subcoriaceous involucre (vs. herbaceous), fewer florets per capitula, i.e., 40–60 (vs. higher in the number of the floret, i.e., about 80 florets), slightly tubular from corolla (vs. funnelliform corolla), cordate base anther (vs. obtuse), obtuse apex anther (vs. acute), longer style, i.e., 12–15 mm long (vs. short, i.e., 7–9 mm long), and longer achene 5.0–5.5 mm long (vs. smaller, 3–4 mm long).

Details of morphological differences between *A. nakhonphanomensis* and *A. ngaoensis* are shown in Table 1. *Acilepis nakhonphanomensis* is in the group having several florets (higher than 30), so an identification key to *Acilepis* species in this group in Thailand is provided below and is modified from Koyama *et al.* (2016).

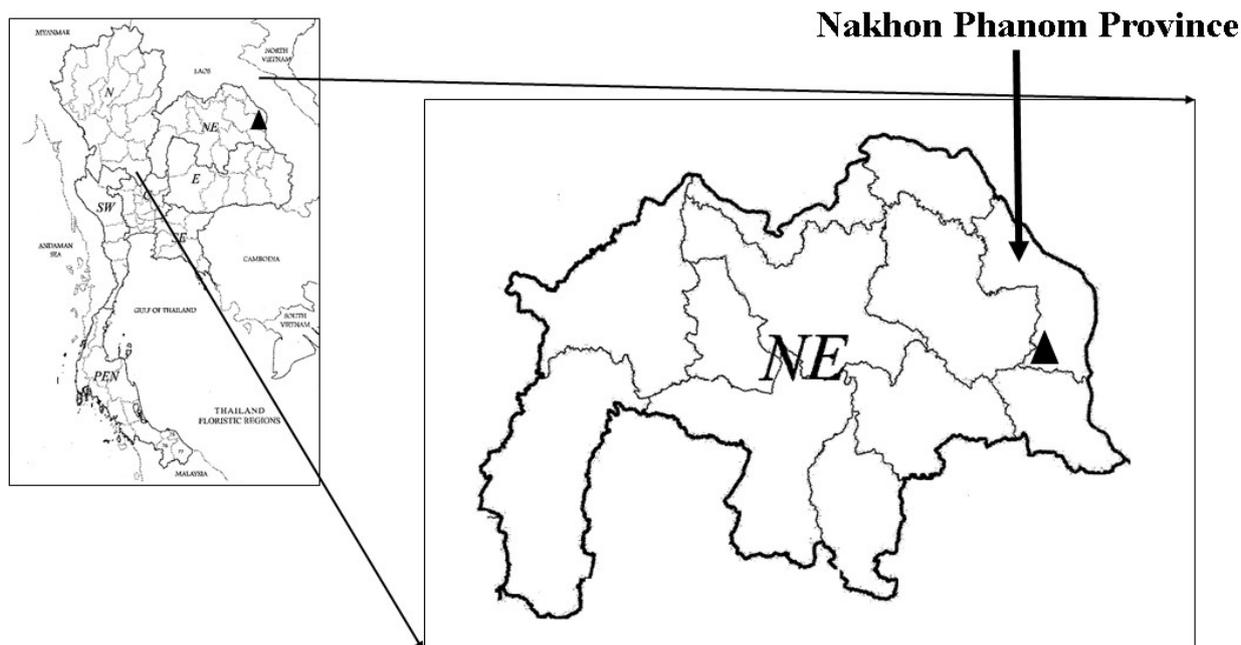


Fig. 4. Distribution of *Acilepis nakhonphanomensis* Chatan & Promprom (▲) in Phu Pha Yol National Park, Nakhon Phanom Province, Thailand.

#### Identification key to *Acilepis* in the group of species with numerous florets (more than 30 florets per capitula) in Thailand.

1. Phyllaries mostly reflexed ..... 2  
- Phyllaries not reflexed ..... 3
2. Leaves basal; corollas and achenes pubescent ..... *A. attenuata*  
- Leaves cauline; corollas and achenes glabrous ..... *A. silhetensis*
3. Capitula terminal, or presence of both terminal and axillary; distinctly pedunculated or sessile ..... 4  
- Capitula only axillary; sessile ..... *A. aquarrosa*
4. Phyllaries densely tomentose; capitula subsessile ..... *A. doichangensis*  
- Phyllaries sparsely arachnoid hairs on both surfaces; capitula with long peduncle ..... 5
5. Receptacle hairy; corolla tubes funnellform ..... *A. ngoensis*  
- Receptacle glabrous; corolla tubes slightly tubular ..... *A. nakhonphanomensis*

#### ACKNOWLEDGMENTS

The authors thank officers in the main herbaria in Europe and Thailand, i.e., AAU, BK, BKF, BM, K, and P, for providing available information on the plant specimens for this study. The authors thank all the Phu Pha Yol National Park officers for their help while collecting plant specimens on our field trips. Thanks for the linguistic advice from Dr Jolyon Dodgson from the UK. Thanks for the valuable comments and suggestions from the editor and reviewers. This research project was financially supported by Mahasarakham University 2021.

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