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Research Article

A New Variety of *Capparis* (Capparaceae) from Northern Peninsular Malaysia

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ABSTRACT

Here we describe and illustrate *Capparis scortechinii* var. *setiuensis*, a new variety of Capparaceae, which is endemic to Terengganu, from the northern region of Peninsular Malaysia. This taxon is placed within the section *Monosticocalyx* characterised by its persistent leaves, free and dimorphic sepals in bud, with the outer pair notably larger and enclosing the inner sepals. It resembles *C. scortechinii* var. *scortechinii* in the inflorescence characteristics, where each flower is subtended by a prominent leaf-like bract and arranged in a dense racemose formation along the rachis, which is densely covered with rusty-brown hairs. However, this variety is easily recognised by its pinkish to greenish leaf-like bract with brown venation, which is glabrous and caducous soon after. Additionally, this variety can be distinguished by its completely glabrous filaments and gynophores, in contrast to var. *scortechinii*, which has these parts that are densely hairy at their base. An updated identification key for Peninsular Malaysian species of *Capparis*, along with the provisional conservation status of this taxon, is also presented.

Keywords: BRIS soil; conservation status; *Capparis* sect. *Monostichocalyx*; Setiu; Terengganu.

INTRODUCTION

Capparis L., a genus of approximately 146 species of small trees, bushy or scandent shrubs, and woody climbers (POWO, 2025), is the largest genus in the family Capparaceae. This Old World tropical and subtropical genus is characterised by simple, persistent or caducous leaves and stipular thorns, which are usually persistent but occasionally absent. *Capparis* exhibit zygomorphic flowers borne in various inflorescence types, including solitary arrangements, racemes, umbels, sub-umbels, fascicles, and supra-axillary rows. The flowers possess four sepals (either free or with the outer pair connate in bud), four asymmetrical petals (the two dorsal petals erect and connate at the base, the two lateral petals free and spreading), six to numerous stamens, a prominently extended gynophore, and a 1–6-locular ovary that develops into either a berry-like fruit or a pepo (Kers, 2002). Morphologically, *Capparis* is divided into four sections: *Capparis* sect. *Capparis*, sect. *Busbeckea* (Endl.) Benth. & Hook.f. (Bentham & Hooker 1862:109), sect. *Monostichocalyx* Radlk. (Radlkofer, 1839: 101) and sect. *Sodada* (Forsk.) Endl. (Endlicher, 1839: 893). Peninsular Malaysian *Capparis* species that belongs to sect. *Monostichocalyx*, is characterized by well-developed, persistent leaves and free sepals (Jacobs, 1960). Nine species of *Capparis* from Peninsular Malaysia were treated in the Flora Malesiana account (Jacobs, 1960), and an additional 2 species were added since then (Julius, 2022: 1 newly described species; Kiew & Rafidah, 2008: 1 newly recorded species). These recent findings suggest a high probability of undescribed taxa waiting to be discovered in Peninsular Malaysia.

A *Capparis* species initially observed by the second author in 2018 at a locality in Setiu, Terengganu, was recently rediscovered during a flora survey of Beach Ridges Interspersed with Swales (BRIS) soil vegetation led by the third author. To confirm its identity, flowering and fruiting specimens were recollected from the same locality and deposited in the Kepong Herbarium (KEP). Superficially, this new material resembles *C. scortechinii* King due to the dense, rusty hairs on the inflorescence rachis and flower bud enveloped by leaf-like bracts. However, detailed examination and comparison with *C. scortechinii* specimens, along with consultation of relevant literature (e.g., Gardner & Hall, 2015; Jacobs, 1965; Maurya et al., 2021), revealed that it represents an undescribed taxon, which is formally described below. A key to the species of *Capparis* in Peninsular Malaysia is also provided to aid in identification.

METHODOLOGY

This research was conducted through field observations of living plants, with supplementary examination of both fresh and herbarium-preserved specimens deposited at KEP. Identification and comparison were carried out by reviewing relevant taxonomic publications (e.g., Chayamarit, 1991; Jacobs, 1965; Julius, 2022); in addition, specimen images from Global Plants JSTOR (http://plants.jstor.org/), Kew Herbarium Catalogue (http://apps.kew.org/herbcat/gotoHomePage.do), and Plants of the World Online (POWO: http://www.plantsoftheworldonline.org/) were consulted. Vegetative and reproductive parts measurements were taken from fresh, wet, and dried herbarium specimens. Flowering and fruiting materials are indicated by ‘fl.’ and ‘fr.’, respectively. The conservation assessment of the species was undertaken using IUCN categories of threat (IUCN, 2012; IUCN Standards and Petitions Subcommittee, 2024).

RESULTS

Taxonomic treatment

Key to Peninsular Malaysian species of *Capparis*
[modified after Julius (2022)]

1 Flowers arranged in a series along the twig just above the leaf axil, with up to 6 flowers…….....**2**
– Flowers arranged in a short fascicle, umbels to subumbels, racemes or paniculate, either terminal on the main stem or lateral leafy twigs in the leaf axil……...……...**5**
2 Stipular thorns absent……..…….... ***C. acutifolia***
– Stipular thorns present…….……**3**
3 Leaf apex long acuminate, 10–13 mm long. Petals broadly elliptic. Fruit torulose…….....***C. cucurbitina***
– Leaf apex mucronate or shortly acuminate, 4–6 mm long. Petals oblanceolate or obovate to elliptic. Fruit ellipsoid or oblong……..…**4**
4 Leaf subcoriaceous to chartaceous, base cordate, apex mucronate. Petals up to 1.6 cm long. Stamens 15–18…….……***C. micracantha* subsp. *micracantha***
– Leaf coriaceous, base cuneate, apex shortly acuminate. Petals up to 2.4 cm long, stamens > 18……..……***C. micracantha* subsp. *korthalsiana***
5 Inflorescences in axillary fascicles……..…***C. pubiflora***
– Inflorescences racemes, paniculate, umbels or sub-umbels……..**6**
6 Inflorescences paniculate……***C. erycibe***
– Inflorescences racemose, umbels or subumbels……..……..…**7**
7 Inflorescences strictly racemose, flowers densely or loosely arranged in raceme……....**8**
– Inflorescences umbellate, sub-umbellate and/or flowers arranged in racemose and becoming crowded at the distal part of the inflorescence……..……**11**
8 Flowers loosely arranged in racemes with early caducous leaf-like bracts. Lamina surface bullate……...…….... ***C. kenaboiensis***
– Flowers are densely arranged in racemes and subtended by persistent and conspicuous leaf-like bracts. Lamina surface smooth …….……....**9**
9 Leaf-like bracts smaller, narrowly elliptic, (1.0–)1.3–2.5 × (0.1–)0.2–0.8 cm, ……..…….... ***C. scortechinii* var. *ruthiae***
– Leaf-like bracts larger, boat-shaped to elliptic, 2.0–3.0 × 0.9–1.6 cm …….....**10**
10 Leaf-like bracts thick, elliptic, 2.5–3.0 × 1.0–1.3 cm, densely hairy with velvety, shiny and rusty hairs abaxially, glabrous adaxially, persistent before anthesis. The gynophore is densely hairy at the base.....***C. scortechinii* var. *scortechinii***
– Leaf-like bracts thin, boat-shaped, but elliptic-shaped when spreading, 2–2.5 × 0.9–1.6 cm, pinkish to greenish with brownish venation, shortly pubescent but glabrous with the naked eye on both surfaces, caducous before anthesis. The gynophore glabrous throughout ……***C. scortechinii* var. *setiuensis* var. nov.**
11 Inflorescences in racemes and/or subumbels, terminal sometimes axillary, sepals hairy.....**12**
– Inflorescences in umbels, lateral or axillary, sometimes terminal, sepals glabrous.....**13**
12 Lamina subcoriaceous to coriaceous, broadly ovate sometimes ovate-elliptic, 13–16 × 5.5–8.5 cm, drying leaves reddish brown rarely pale green with pale yellow rarely dark red venation on both surfaces, intercostal veins obscure. Inflorescence terminal with flowers arranged in racemose and becoming crowded at the distal part of the inflorescence, stamens

30–40.....***C. trinervia* var. *chungiana***

– Lamina chartaceous, oblong-elliptic or broadly lanceolate, (5–)10–14(–19) × (2–)3.5–8.5 cm, drying leaves dull green with brownish main nerves on both surfaces, intercostal veins irregularly reticulate, and distinct. Inflorescence terminal with flowers arranged racemosely and becoming crowded at the distal part of the inflorescence, sometimes subumbellate on 3–4 cm long peduncles in the axils of the uppermost leaves, stamens (30–)60–70 .....***C. trinervia* var. *trinervia***

13 Twigs flexuous ..... ……. ***C. sepiaria***

– Twigs ± straight ..... ……...**14**

14 Leaf < 5 cm long, margin revolute, lamina coriaceous to subcoriaceous, apex obtuse or retuse. Umbels pedunculate, 1–4-flowered, axillary and/or terminal ……..……. ***C. versicolor***

– Leaf > 5 cm long, margin flat at the edge and not revolute, lamina chartaceous, apex usually obtuse, sometimes acute, with acumen 5–10 mm long. Umbels sessile, 3–5-flowered with 1–2 small leaves, sometimes a few umbels united to a small panicle, terminal or lateral on small twigs……...…….***C. diffusa***

New Taxon

Capparis scortechinii* var. *setiuensis Julius, Dome & Jamilah MS sp. nov., Fig. 1

Diagnosis. This new variety of *Capparis* is similar to *Capparis scortechinii*, particularly var. *scortechinii*, in its leaf venation and hairiness, as well as its inflorescence pattern. The inflorescence consists of a single flower subtended by a large, leaf-like bract, arranged in a compact racemose along the inflorescence rachis, which is covered by rusty-brown hairs. However, this variety is easily recognised by its chartaceous, pinkish to greenish leaf-like bract with brown venation, which is shortly pubescent but glabrous to the naked eye and caducous soon after (in contrast to the coriaceous and velvety, rusty-brown hairs that persist in var. *scortechinii*). Additionally, var. *setiuensis* has entirely glabrous filaments and gynophore, unlike var. *scortechinii*, which is densely hairy at the base.

Type. MALAYSIA. Peninsular Malaysia: Terengganu, Setiu District, Kampung Pandan Jaya, Rhu Sepuluh, grows on lowland, BRIS soil vegetation, on private land and near housing area, 5°34'24.8"N 102°50'47.6"E, 3 m elev., 3 November 2022 (fl., fr.), *A. Julius et al.*, *FRI100802* (holotype: KEP!)]

Description. A shrub *c.* 2.5 m tall, with long, scrambling and wiry woody branches. ***Indumentum*** of simple, rusty brown hairs on branches, petioles and peduncles, minutely pubescent on sepals, white hairs on petals. ***Twigs*** straight, terete, young pubescent with rusty brown hairs, mature glabrous and green. ***Stipular thorns*** retrorse, (2–)3–5 mm long, young pubescent with rusty brown hairs, mature glabrous, flanked the leaves. *Leaves* spirally arranged; petiole thick, 1–1.5 cm long, young pubescent with rusty brown hairs, mature glabrous and green; lamina coriaceous to subcoriaceous, 10–13.5 × 4–6 cm, young pubescent with white hairs above, rusty brown hairs beneath, mature glabrous on both surfaces, base cuneate to cuneate-rounded, margin ciliate with white hairs, apex acuminate, with acumen 4–6 mm long, recurved downward; midrib flat or slightly sunken above, raised beneath, brownish turning green with age, young pubescent with white hairs above, densely rusty hairs beneath, mature glabrous on both surfaces; *lateral veins* 4–6 pairs, looping and joining towards margin, young brownish covered with rusty hairs beneath, mature glabrous and green, distinct above,

prominent beneath; intercostal veins reticulate, distinct above, prominent beneath. ***Inflorescences*** terminal on a robust, lateral specialized flowering branches and leafy twigs, rachis stout, young densely rusty brown, mature green and glabrous; bracts leaf-liked, pinkish to greenish with brownish venation, chartaceous, boat-shaped, but elliptic-shaped when spreading, 2–2.5 × 0.9–1.6 cm, apex acuminate and recurved, enveloping young bud, caducous before anthesis, shortly pubescent but glabrous with naked eye on both surfaces. ***Flowers*** many, in compact racemes, buds globose, 7–10 × 6–14 mm, pinkish; pedicels greenish, 7–12 mm long, pubescent with white hairs; sepals 4, pinkish except whitish margin, outer-pair imbricate, orbicular, larger one *c*. 1.2 × 1.5 cm, smaller one *c*. 1.4 × 1 cm, inner pair elliptic, 1.2–1.3 × 0.6–0.7 cm; petals 4, pale pink with white margin, venation on surfaces pinkish, dorsal pair obovate to ovate, *c*. 1.4 × 1 cm, connate at base, glabrous except wooly at base abaxially, wooly except near apex adaxially; ventral pair oblanceolate, 2.3–2.5 × 1 cm, wooly abaxially, glabrous adaxially; stamens 48–55, unequal length, filament 2.5–4 cm long, white but pink on upper half, anther narrowly sagittate, 2–3 mm long, basifixed, dark pink abaxially, white adaxially; ovary pinkish to brownish, ovoid with pointed tip, 3–4 × 1–3 mm, on gynophore 2.5–4 cm long, pinkish, entirely glabrous, stigma obscure. ***Fruits*** only 1–2 fully developed per infructescence, young green turning yellow to brown when ripe, globose to sub-globose on stout gynophore, 6.0–6.5 × 5 cm. ***Seeds*** a few; embryo with thin cotyledons tightly coiled into a small bundle and a long, thick radicle coiled several times around the cotyledon.

Distribution. Endemic and rare in Peninsular Malaysia, Terengganu, known only from Pantai Rhu 10 and Merang at Setiu District.

Ecology and phenology. Occurring within lowland habitats on BRIS soils, typically in open, sun-exposed areas. Flowering specimens were collected in March and November, with additional flowering observed in July and December. Fruiting material was observed and collected in July and November.

Etymology. The varietal epithet is named after the locality where this taxon was first discovered.

Provisional conservation status. Critically Endangered (CR) B2ab (ii, iii, iv). *Capparis scortechinii* var. *setiuensis* is currently known only from two localities in Setiu, Terengganu, Peninsular Malaysia, and inhabits lowland coastal vegetation outside protected areas. There are currently only six mature individuals known, with fruiting observed once or twice during the study period. However, no seedlings or saplings were found in the vicinity of the parent trees. The area of occupancy (AOO) is estimated to be 8 km², calculated using a 2 × 2 km grid as per IUCN guidelines. This variety is highly localised and has a restricted distribution. As observed during recent field surveys, both known populations are exposed to threats from habitat disturbance and land-use changes, particularly those associated with coastal development and vegetation clearance. Based on its very limited AOO of 8 km², occurrence at fewer than five locations, and the continuing decline in the area of occupancy, quality of habitat, and number of locations, this variety is assessed as Critically Endangered B2ab (ii, iii, iv)**,** following the IUCN Red List Categories and Criteria (IUCN, 2012; IUCN Standards and Petitions Subcommittee, 2024).

Additional specimen examined. MALAYSIA. Peninsular Malaysia: Terengganu, Setiu District, Merang, grows on lowland, BRIS soil vegetation, at the edge of equine track and nearby construction area of PERKESO Rehabilitation Center, 5°31' 0.8508" N 102° 58' 7.392" E, 8 m elev., 25 July 2024 (fl., fr.), *Dome Nikong FRI107943* (KEP!)]

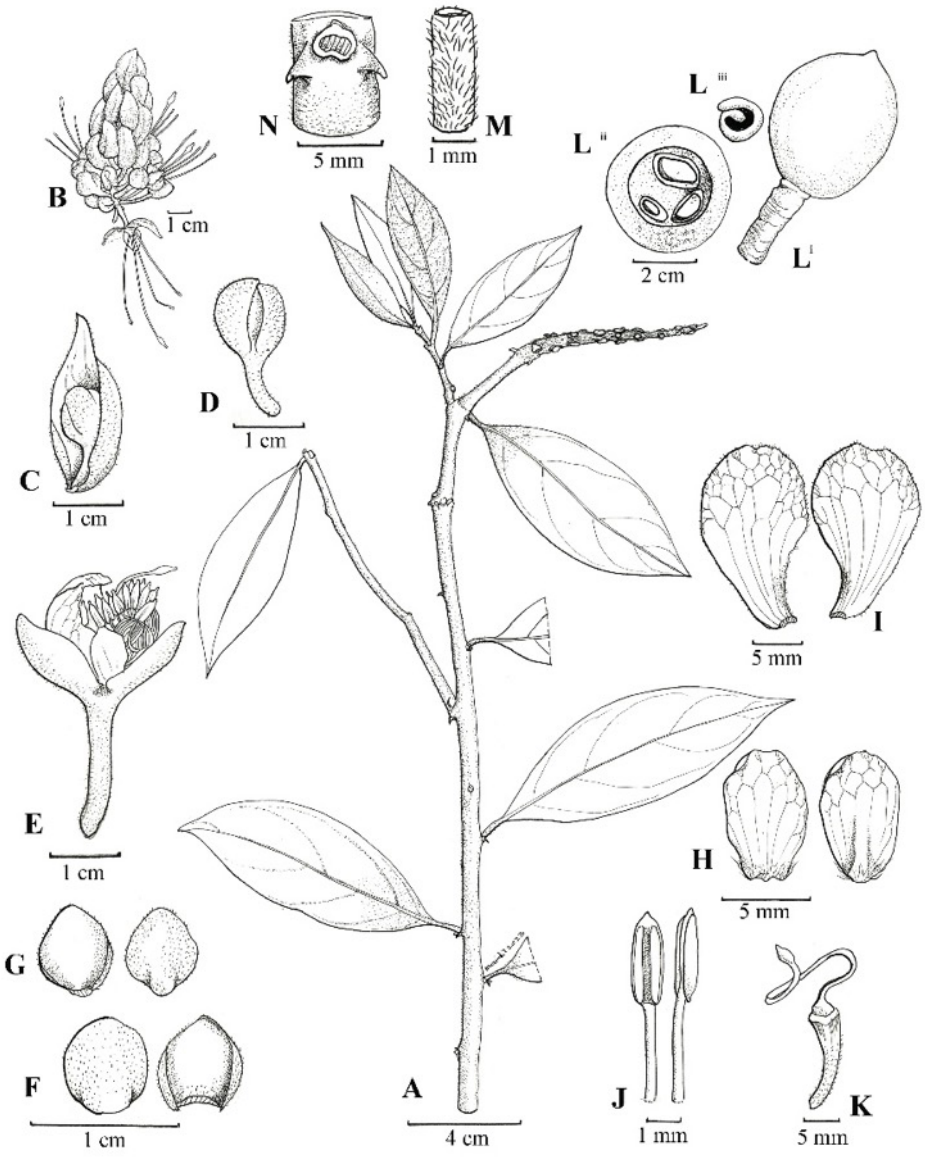

Figure 1: *Capparis scortechinii* var. *setiuensis* Julius, Dome & Jamilah var. nov. **A.** Flowering branches, **B.** Inflorescence, **C.** Flower bud enclosed by the leaf-like bract, **D.** Flower bud, **E.** Opening flowers, **F.** Sepals, outer pair, **G.** Sepals, inner pair, **H.** Petals, dorsal pair, **I.** Petals, lateral pair, **J.** Stamen, adaxial view (left), abaxial view (right), **K.** Pistil, **L.** Fruit (i), with cross section showing seeds (ii) and coiled cotyledon (iii), **M.** Indumentum, **N.** Stipular thorns.

DISCUSSION

Among the Peninsular Malaysian taxa of the genus *Capparis*, *C. scortechinii* is easily recognised by its compact inflorescence, with each flower subtended by a large, leaf-liked bract. However, the branching pattern of its inflorescence has not been fully understood due to the limited material available at KEP and on loan from SING and BKF—until the discovery of this new variety.

Figure 2: *Capparis scortechinii* var. *setiuensis*. **A.** Habit, **B**. Flowering branch, **C**. Inflorescence, **D.** Inflorescence on main and lateral branches, **E**. Inflorescence, close up, **F**. Infructescence and inflorescence. [Photos by DN (A-B, E-F) and AJ (C-D)].

Julius (2022) recently noted that var. *scortechinii* has both terminal and axillary inflorescences, whereas var. *ruthiae* Julius has only terminal inflorescences. For var. *scortechinii*, its inflorescence is described as axillary because leaves were not observed below the flowers, though scars— possibly from fallen leaves or bracts— were present. Some of these scars are

flanked by rudimentary stipular thorns, which are also observed in the new variety, suggesting that both varieties share the unique characteristic of leaf-like bracts flanked by stipular thorns. However, field observations of the new variety revealed that a few young leaves were present below the inflorescence on lateral twigs but fell off soon before anthesis (Fig. 2, B). In the case of var. *ruthiae*, it is possible that its inflorescences also occur terminally on young, new lateral twigs, but such occurrences have not yet been observed or collected. Thus, it is assumed that all varieties of *C. scortechinii* bear terminal inflorescences on both main leafy branches and lateral twigs.

Compared to var. *scortechinii*, which inhabits lowland rainforests, and var. *ruthiae*, which is frequently found at forest margins, or in gaps, or along roadsides from hill slopes up to 1,280 m, var. *setiuensis* is the only variety found growing on BRIS soil (Fig. 2, A)— a substrate characterised by its sandy texture and low nutrient retention, making it a challenging environment for plant growth. Due to its restricted distribution, with only one to two individuals found at each site, and its ability to adapt and survive in nutrient-poor soils, this new variety may be worth propagating as part of an ex-situ conservation program. Attempts to find wildlings after the fruiting season so far have been futile. Seeds are pseudo-viviparous, and the survival of the seedlings after germination is low. Moreover, var. *setiuensis* is rare and at risk of extinction due to ongoing housing development and other threats related to land use changes.

CONCLUSION

Capparis scortechinii var. *setiuensis* is confirmed as a distinct and narrowly distributed variety restricted to BRIS soil habitats in Setiu, Terengganu. The variety clearly differs from the other varieties of *C. scortechinii*, and its occurrence within privately owned and rapidly developing housing areas, combined with a small number of known individuals, indicates a high risk of extinction. These findings emphasis the urgency of targeted conservation efforts for this variety, particularly through cooperation with landowners, awareness initiatives, and *ex-situ* propagation. Further research is urgently needed to systematically document its phenology, fruit set, and seed biology to support conservation efforts. This study also highlights that unique endemic taxa can still occur even in marginal or human-modified habitats, emphasising the importance of continued botanical documentation and conservation planning in such landscapes.

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DECLARATIONS

Research permit(s). This study was conducted on private land, and consent from the owner was obtained verbally prior to the research being conducted.
Ethical approval/statement. Not applicable.
Generative AI use. We declare that generative AI was not used in this study nor in the writing of this article.

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