Secamone brevicoronata and S. pedicellaris (Apocynaceae), two new species from Madagascar

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Secamone brevicoronata and *S. pedicellaris (Apocynaceae),* two new species from Madagascar

Abstract

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Secamone brevicoronata and *S. pedicellaris*, two species of *Apocynaceae* s.l., *Secamoneae,* from Madagascar, are described as new to science, illustrated and compared with related taxa.

Introduction

While preparing a treatment of the tribe *Secamoneae* (*Apocynaceae* s.l.) for the "Flore de Madagascar et des Comores", a couple of new taxa were encountered among the unidentified Malagasy material of the Muséum National d'Histoire Naturelle in Paris. The taxa proved to belong to *Secamone* R. Br., a paleotropical genus of suffrutescent twiners or small scrambling herbs, rarely erect shrubs, with usually small, white to yellow flowers.

The genus has been revised lately (Goyder 1992, Klackenberg 1992a, b, 1997a, 1998) in its entire distribution area from W Africa to N Australia. The generic delimitation and distinctness of *Secamone* versus *Toxocarpus* Wight & Arn. has been discussed and questioned (Klackenberg 1992a, b). It has been shown that the Malagasy species formerly placed in *Toxocarpus* do not belong to this genus, and these taxa have been transferred to *Calyptranthera* Klack., *Pervillea* Decne. and *Secamone* respectively (Klackenberg 1992a, 1995, 1996a, b, 1997b). However, the morphological variation within *Secamone* as circumscribed today is still rather large. The taxa described in this paper clearly fit into species groups of Malagasy *Secamone* discussed by Klackenberg (1992a).

Secamone was formerly placed in the *Asclepiadaceae*. Several recent analyses using both morphological (Judd & al. 1994, Struwe & al. 1994) and molecular (Sennblad & Bremer 1996, Civeyrel & al. 1998) data, however, show the traditional *Asclepiadaceae* to be a subgroup of the *Apocynaceae,* and the two families are now usually united in the *Apocynaceae* s.l., a treatment followed here.

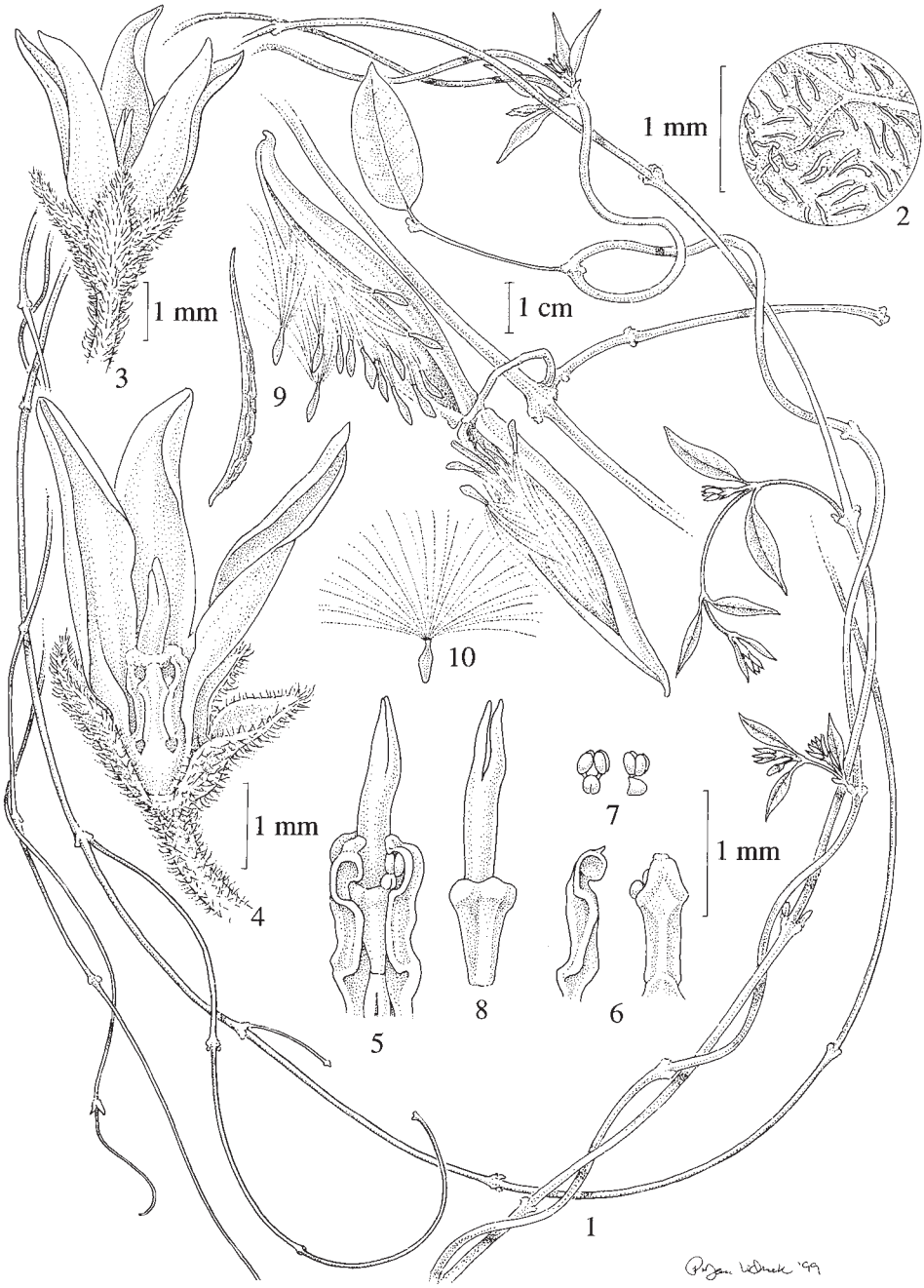

Fig. 1. *Secamone brevicoronata* – 1: habit; 2: lower leaf surface with appressed hairs; 3: flower; 4: flower with one calyx lobe and two corolla lobes removed; 5: gynostegium with one anther removed; 6: anther, lateral and dorsal (right) view; 7: pollinarium, axial (left) and lateral view; 8: style head; 9: follicles with seeds (right) and detached fruit placenta (left); 10: seed. – From the holotype; drawn by Pollyanna Lidmark, Stockholm.

Secamone brevicoronata Klack., **sp. nova** – Fig. 1.
Holotypus: Madagascar, Bemaraha, 8.1943, *Herb. Jard. Bot. Tananarive 6205 Boiteau* (P).

Species haec *Secamonae uniflorae* affinis lobis coronae basaliter latis et planis sed apice lateraliter compressis et stigmate longo bifurcatoque, autem differt coronae parte loborum longa distincte falcata nulla vel lobis stigmatis omnino erectis.

Suffrutescent twiner with youngest parts distinctly hairy. *Leaves* opposite, herbaceous, entire; blade c. 3.0 × 1.3 cm, elliptic to oblong, truncate at the base, acute at the apex, glabrous above, with short appressed hairs below; venation pinnate, looped; midrib even with leaf surface to impressed near the petiole above, distinctly raised below; epidermis smooth on both sides; petiole 1-1.5 mm long, sparsely pubescent as the blade. *Flowers* pentamerous, actinomorphic, 1-3 on brachyblasts or at top of young branches; pedicels 2-3 mm long, thin. *Calyx* lobes c. 1.9 × 0.7 mm, narrowly ovate, rounded to subacute at the apex, with rather dense whitish hairs outside, glabrous inside, longer than the tube. *Glands* insignificant. *Corolla* fused into a tube for c. 1/4 of its length, contorted with the right lobe margins overlying, with a patch of hairs below each lobe near the mouth inside; colour unknown; tube c. 1.0 mm long; lobes probably ± erecto-patent, c. 3.9 × 1.3 mm, narrowly elliptic, subacute at the apex. *Staminal column* 1.2 mm high, filaments with sclerified margins almost to the base. *Corona* without free lobes; fused basal part broad and dorsally flat below but rather abruptly laterally compressed higher up and forming a narrow wing attached along c. 2/3 of the stamen. *Pollinia* 4 in each pollinarium, glued on a soft corpusculum, minute, ± ascending, ellipsoidal, c. 0.15 mm long. *Ovary* of two separate carpels, subinferior, with numerous ovules. *Style* indistinct; style head projecting about twice as long as the staminal column; upper narrower part c. 1.5 mm long, about twice as long as the lower broader part, not broadened at the apex but distinctly bilobed; lobes erect, standing close together. *Follicles* 5-7 × c. 1 cm, narrowly ovoid, thick-walled, glabrous; angle between the two mericarps 180°. *Seeds* 6-8 mm long; coma 1.5-2 cm long.

Distribution and habitat: *Secamone brevicoronata* is known from sandstone rocks protected from fire in the Bemaraha region. It is only know from the type specimen, which was collected in flower and fruit in August.

The only material known of *Secamone brevicoronata* consists of almost leafless stems but with flowers and mature fruits present. The area of collection, the Bemaraha plateau, is highly undercollected, much due to inaccessibility.

Secamone brevicoronata belongs to a group hitherto thought to consist of four species, *S. ankarensis* (Jum. & H. Perrier) Klack., *S. grandiflora* Klack., *S. reticulata* Klack. and *S. uniflora* Decne. (Klackenberg 1992a). These taxa are characterized by large flowers (within *Secamone*) with a long bifid style head in combination with corona lobes that are dorsally flat at base and then rather abruptly narrowing into a distinctly laterally flattened falcate free lobe (Klackenberg 1992a: 22). This group is distributed over most of Madagascar, particularly in the drier West Malagasy phytogeographical Region, but is not know from the Eastern Domain (phytogeographical delimitations after Humbert 1955). *Secamone falcata* Klack. and *S. pedicellaris,* which is described below, also adhere to this group by their corona structure, but have small leaves with different leaf morphology, shorter and more shallowly cleft style heads and shorter corolla lobes that are broader in outline (Klackenberg 1992a: 25). *Secamone ankarensis* and *S. reticulata* differ from the other species by leaves covered with long curved intertwined hairs below, while *S. grandiflora* has glabrous leaves. *Secamone brevicoronata* seems to be most closely related to *S. uniflora*. Both have the lower leaf surface covered by small (< 0.2 mm long, *Secamone uniflora* rarely glabrous) appressed hairs (Fig. 1: 2). The single mature leaf present in the type collection of *Secamone brevicoronata* has a denser indumentum beneath than *S. uniflora*. The most characteristic feature of *Secamone brevicoronata,* however, is the structure of the gynostegium. It differs by lacking the large and clearly falcate corona lobes, which are characteristic for all other

species discussed above. Instead it has a narrow wing along the anther above the broad and dorsally flat base (Fig. 1: 6). Furthermore, the two lobes of the cleft style head are erect and stand close together, as opposed to the usually distinctly divaricate lobes in *Secamone ankarensis, S. grandiflora, S. reticulata* and *S. uniflora*. In *Secamone falcata* and *S. pedicellaris* the lobes of the style head are also erect, but only shortly cleft.

Secamone brevicoronata is the only taxon of the species discussed above that is known from the Bemaraha plateau.

Secamone pedicellaris Klack., **sp. nova –** Fig. 2.
Holotypus: Madagascar, Manompetsa, 4.1933, *Perrier de la Bâthie 19090* (P).

Species haec *Secamonae falcatae* affinis lobis coronae basaliter latis et planis sed apice lateraliter compressis atque distincte falcatis necnon foliis parvis ad brachyblastos dispositis et subtus tuberculatis, autem differt pedicellis longioribus (5-7 mm longis) et gracilioribus (c. 0.2 mm crassis), tubo corollae omnino glabro vel cum 5 sacculis, et foliis etiam supra tuberculatis.

Suffrutescent twiner. Leaves basically opposite but usually clustered on shortened branches (brachyblasts), herbaceous; blade 1-1.5 × 0.5-0.9 cm, obovate, attenuate at the base, rounded at the apex, first with sparse short hairs but soon glabrescent; venation not visible except for the midrib; midrib even with the leaf surface above and hardly visible when dry, somewhat raised near the base below; epidermis ± tuberculate-papillate on both sides; petiole 5-7 mm long, glabrescent. *Inflorescences* terminal on shortened branches with the flowers projecting, shorter or longer than the adjacent leaves; cymes of 1-3 flowers; axes absent; pedicels 5-7 mm long, with curved reddish hairs; bracts absent. *Flowers* pentamerous, actinomorphic. *Calyx* lobes c. 1.8 × 0.7 mm, oblong, rounded at the apex, with short, often curved reddish hairs outside and also inside near the apex. *Glands* 10, conspicuous, pigmented when dry. *Corolla* ovate in bud and rounded at the apex, fused for 1/3-1/4 of its length into a tube, contorted with the right lobe margins overlying, not twisted, glabrous; colour unknown; tube c. 1.3 mm long, with 5 distinct pouches alternating with the calyx lobes; lobes probably rotate, c. 3.0 × 1.7 mm, somewhat obovate, rounded at the apex. *Staminal column* (corona lobes excluded) c. 1.4 mm high; filaments with sclerified margins almost to the base. *Coronal lobes* c. 1.6 mm long, laterally compressed, falcate, projecting distinctly above the staminal column; basal part broad and dorsally flat at the base but rather abruptly laterally compressed higher up, attached along c. 3/4 of the stamen. *Pollinia* 4 in each pollinarium, glued on a soft corpusculum, minute, ± ascending, ellipsoidal, c. 0.15 mm long. *Ovary* of two separate carpels, subinferior, with numerous ovules. *Style* lacking; style head projecting above the staminal column but shorter than the coronal lobes; upper narrower part c. 0.8 mm long, about as long as the lower broader part, not or only slightly broadened at the apex but distinctly bifid. *Fruits* not seen.

Distribution and habitat: *Secamone pedicellaris* is only known from the type specimen, which was collected in flower in April from a limestone area at Tsimanampetsotsa (Manompetsa) in SW Madagascar.

This taxon is distinct and easily recognized by its rather small leaves mostly clustered on short branches (brachyblasts), by its long falcate corona lobes and its tuberculate-papillate lower leaf epidermis. These characters are all shared, however, with *Secamone falcata*. *Secamone falcata* was described on a single specimen (Klackenberg 1992a: 25), but is today known by five collections from SW Madagascar, including one from limestone at Tsimanampetsotsa, indicating that this species and *S. pedicellaris* are sympatric (Fig. 3). *Secamone pedicellaris* differs, however, in several characters, both vegetative and floral. The most important distinguishing characters are different guiding structures, indicating different pollinators. The corolla tube is glabrous, i.e. it lacks the patches of hairs in the mouth of the tube, which are present in *Secamone falcata*. Fur-

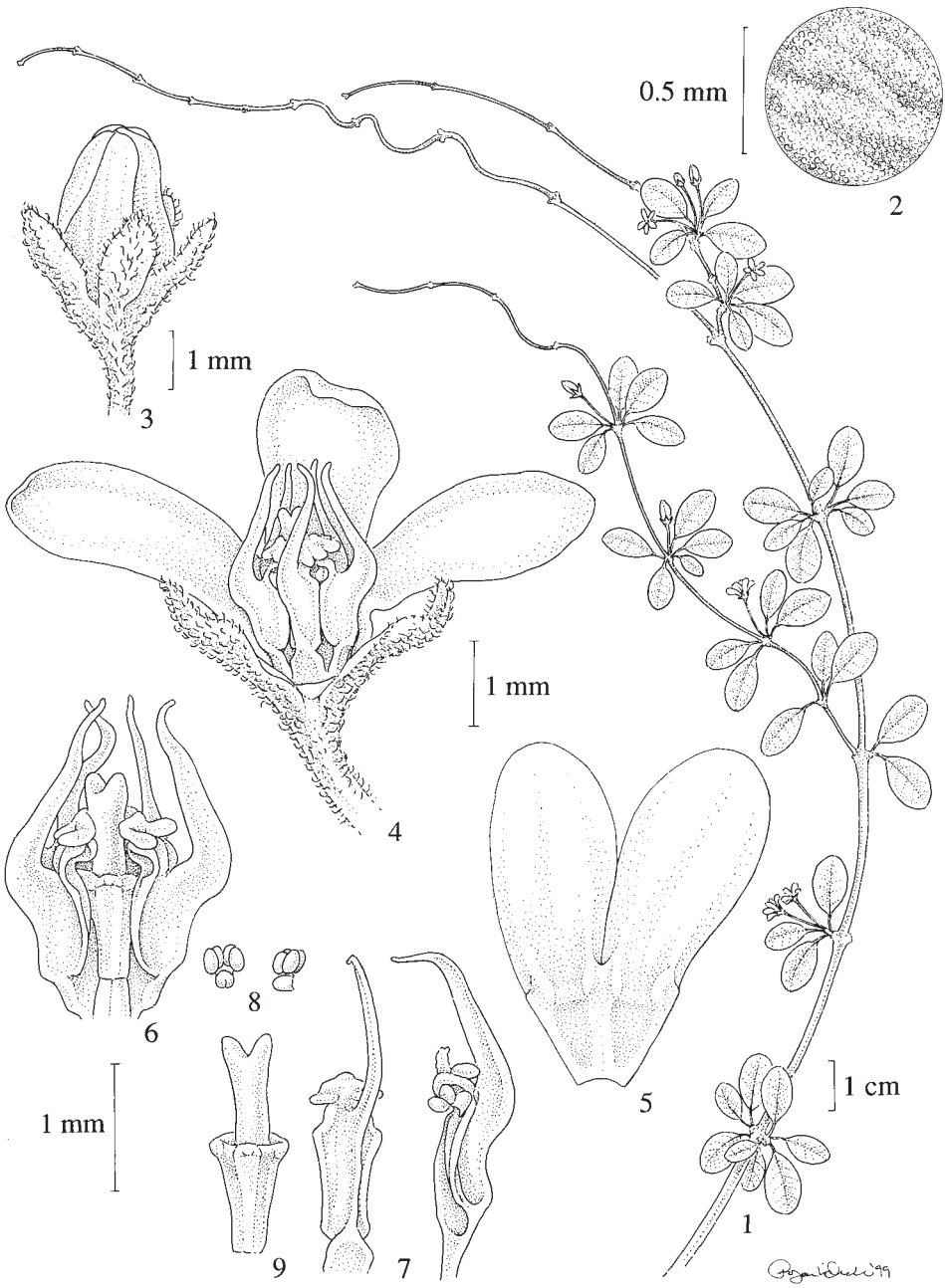

Fig. 2. *Secamone pedicellaris* – 1: habit; 2: lower leaf surface showing tuberculate epidermis; 3: flower in bud; 4: flower with one calyx lobe and two corolla lobes removed; 5: portion of corolla, adaxial view; 6: gynostegium with one anther removed; 7: anther, dorsal (left) and lateral view; 8: pollinarium, axial (left) and lateral view; 9: style head. – From the holotype; drawn by Pollyanna Lidmark, Stockholm.

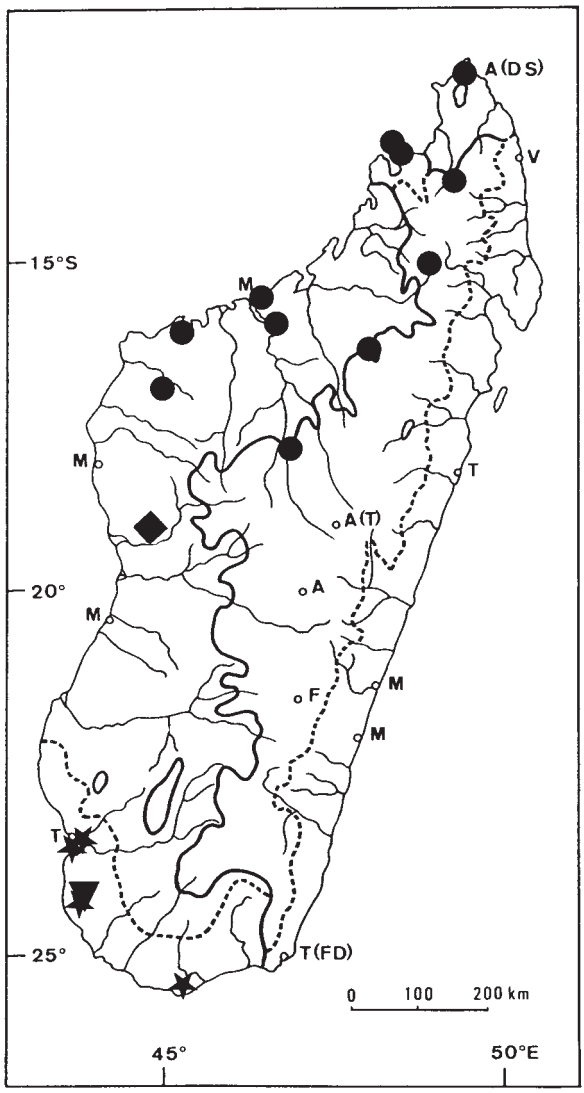

Fig. 3. Distribution map of *Secamone brevicoronata* (◆), *S. pedicellaris* (▼) and the closely related species *S. uniflora* (●) and *S. falcata* (★) discussed in the text.

thermore the tube of *Secamone pedicellaris* is longer and furnished with five small cavities slightly protruding between the calyx lobes. These cavities are absent in *Secamone falcata*. The flowers are borne on longer and more slender pedicels, 5-7 mm long and c. 0.2 mm thick or less as opposed to 1-3 mm long and 0.5-0.8 mm thick in *Secamone falcata*. The leaves are glabrous and furthermore finely tuberculate-papillate on both sides, not only on the lower leaf epidermis. This gives an equifacial impression, as opposed to the leaves in *Secamone falcata,* which are distinctly darker on the adaxial side when dry. The calyx lobes are twice as long as broad, but only c. 1.5 times so in *Secamone falcata*.

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