



A New Species of *Eriosema* (Leguminosae, Papilionoideae, Phaseoleae) from Minas Gerais, Brazil

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Abstract

Eriosema tozziae, a new species of Leguminosae (Papilionoideae, Phaseoleae, Cajaninae) from Minas Gerais is described and illustrated. Similar to *E. defoliatum*, it differs morphologically from the latter by the persistent leaves in the reproductive phase (vs. caducous in *E. defoliatum*) and the shorter inflorescences (10–13 cm long vs. 15–30 cm long in *E. defoliatum*). An identification key for the *Eriosema* species in Minas Gerais is also provided.

Key Words: Cajaninae, Fabaceae, Neotropics, taxonomy

Introduction

The pantropical genus *Eriosema* (De Candolle 1825:388) Desvaux (1826: 421) (Leguminosae, Papilionoideae, Phaseoleae, Cajaninae) contains about 150 species and is characterized by its subshrubby habit, woody root (xylopodium), inflorescences in axillary or terminal racemes, with flowers sparsely distributed along the axis or crowded at its apex, and seeds with a linear hilum and an apical funicle, inserted at its extremity (Gear 1970).

The most recent taxonomic study of *Eriosema* is that of Gear (1970) who treated only the American species of the genus. Studies involving *Eriosema* in Brazil are few and are restricted to the description of new taxa or studies of regional floras, such as Lewis (1987), Lewis & Owen (1989), Rogalski & Miotto (2011) and Fortuna-Perez *et al.* (2013). There are about 30 species of *Eriosema* in Brazil, occurring mainly in the cerrado vegetation and rocky outcrops, with the two main centers of diversity in Goiás (26 species; Fortunato 2014), and Minas Gerais (23 species; Cândido 2014).

Our survey of herbarium collections for a systematic study of *Eriosema* in Brazil uncovered a new species which is here described and illustrated. An identification key for the *Eriosema* species in Minas Gerais is also provided.

Eriosema tozziae Cândido & Fort.-Perez, *sp. nov.* (Fig. 1)

Eriosema tozziae is morphologically similar to *Eriosema defoliatum*, but differs from it by its persistent leaves during the reproductive period, caducous stipules, all of the three carinal calyx lobes nearly equal in length (5–8 mm long), shorter inflorescences (10–13 cm long), and shorter pedicels (4–5 mm long). Whereas in *E. defoliatum* leaves are caducous during the reproductive period; stipules persistent; one of the three carinal calyx lobes is longer than others (10–15 mm vs. 3–5 mm); the inflorescences are longer (15–30 cm), as are the pedicels (8–10 mm).

Type :—BRAZIL. Minas Gerais: ca. 15 km W of Corinto Municipality, alt. 600 m, 02 March 1970 (fl, fr), *H.S. Irwin et al.* 26766 (holotype UB!).

Subshrub ca. 1 m tall, stems erect, densely pilose, with non-glandular and glandular trichomes. *Stipules* 4–5 × 2–2.5

mm, ovate, rhombic or lanceolate, apex acute to rounded, caducous, externally pilose. *Stipels* absent. *Leaves* trifoliolate, petioles 2–3 mm long. Lateral leaflets 1.5–3.5 × 1.5–2 cm, terminal leaflets 3–5.5 × 2–3.5 cm, without clearly marked veins, adaxial and abaxial surfaces densely rufous-velutinous, ovate to broadly ovate, apex mucronate, base slightly cordate, margins entire, petiolule up to 1 mm long, pilose. *Bracts* 3–4 × 6.5–8 mm, ovate to lanceolate, adaxial surface densely pilose, abaxial surface glabrous, multi-veined. *Inflorescences* terminal or axillary racemes, with up to 22 flowers, racemes (including peduncle) 10–13 cm long, pilose, pedicels 4–5 mm long, flowers 10–15 mm. *Calyx* 5-lobed, pilose, margins entire, 5-veined; tube 3–4 mm long, the two vexillary lobes 3–4 mm long, the three carenal lobes 5–8 mm long; *corolla* yellow, the standard 12–15 × 8–9 mm (excluding claw), obovate, multi-veined, apex slightly retuse or slightly emarginate, base auriculate, auricles 1 mm long, adaxial surface pubescent, abaxial surface glabrous; claw 3–4 mm; wing petals 9–10 × 4–5 mm (excluding claw), obovate, apex rounded, glabrous, slightly auriculate; claw 4 mm long; keel petals 10 × 3–4 mm (excluding claw), falcate to obovate, apex rounded, glabrous to pilose at the apex; claw 3–4 mm long; stamens 13–16 mm long, uniform; ovary pilose; the style straight, stigma minute. *Fruit* ca. 14 × 8 mm, brown, pilose, widely elliptic, staminal tube persistent. *Seeds* not seen.

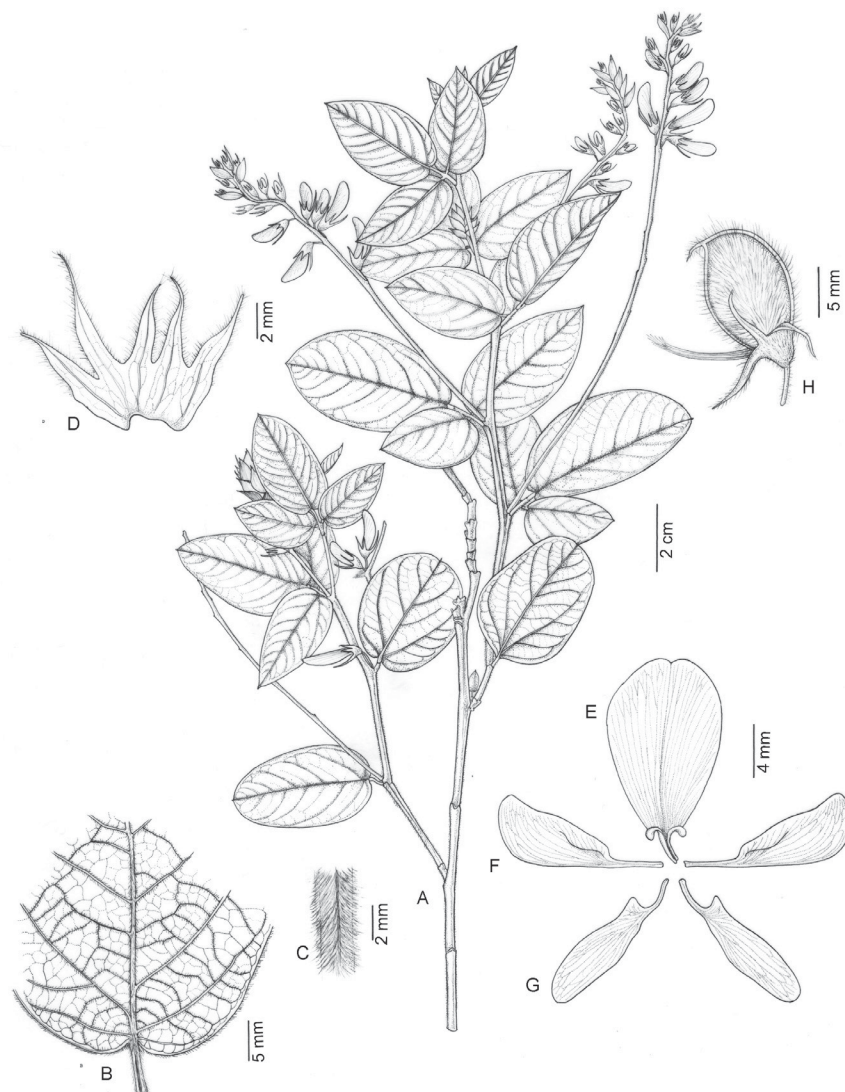


FIGURE 1. *Eriosema tozziae*. A. Flowering branch. B. Detail of the leaflet C. Detail of the stem indumentum. D. Calyx. E. Standard petal. F. Wing petals. G. Keel petals. H. Immature fruit with the persistent calyx, staminal sheath and gynoeceum (H. S. Irwin *et al.* 26766). Drawn by Samira Rolim.

Distribution and ecology:—The taxon is known from a single collection in the municipality of Corinto, in the cerrado region of Minas Gerais, Brazil.

Phenology:—The species was collected with flowers and fruits in March.

Etymology:—The epithet honors Dr. Ana Maria Goulart de Azevedo Tozzi, a distinguished Brazilian legume researcher.

Conservation Status:—In accordance with the IUCN Red List criteria (IUCN 2001), the conservation status of *Eriosema tozziae* must be considered Data Deficient (DD) because it is represented only by a single collection. However, our field observations suggest that the species may be rare and threatened by the encroaching Eucalyptus plantations. No other populations of *E. tozziae* were found in our visits to the region.

Discussion:—*Eriosema tozziae* resembles *E. defoliatum* Benth (1859: 524). They are easily differentiated by the length of their fully developed inflorescences: it is 10–13 cm in *E. tozziae*, whereas in *E. defoliatum* it is always longer than 15 cm. The new species also differs from *E. defoliatum* by its persistent leaves during the reproductive period (vs. caducous), caducous stipules (vs. persistent), and longer pedicels (8–10 mm vs. 4–5 mm).

Key to the species of *Eriosema* in Minas Gerais, Brazil

1	Leaves unifoliolate	2
-	Leaves usually trifoliolate, but sometimes the basal ones unifoliolate	7
2	Stipules free, leaflets obovate	<i>E. obovatum</i> Benth.
-	Stipules fully or partially fused, leaflets linear, lanceolate, elliptical and ovate	3
3	Leaflets linear, base acute, with the appearance of a rigid stick	<i>E. stenophyllum</i> Harms
-	Leaflets mostly ovate to lanceolate, base obtuse to cordate, never with the appearance of a rigid stick	4
4	Stipules deciduous; leaflets conspicuously variable in size on the same plant	<i>E. benthamianum</i> Mart. ex Benth.
-	Stipules persistent; leaflets uniform in size on the same plant	5
5	Subshrubs erect or ascending; stems usually glabrous or glabrescent; leaflets coriaceous; inflorescence densely white-sericeous (rarely pubescent)	<i>E. rigidum</i> Benth.
-	Subshrubs prostrate, rarely erect; stems pubescent; leaflets membranaceous to slightly coriaceous; inflorescences glabrescent to pubescent	6
6	Racemes with 8–15 flowers, usually longer than mature leaves	<i>E. heterophyllum</i> Benth.
-	Racemes with 2–10 flowers, usually shorter than mature leaves	<i>E. simplicifolium</i> (DC.) G. Don
7	Fully developed racemes longer than adjacent leaves	8
-	Fully developed racemes shorter than adjacent leaves	14
8	Stems glabrous or glabrescent; leaflets with three veins clearly marked	<i>E. glabrum</i> Mart. ex Benth.
-	Stems pubescent; leaflets without clearly marked veins	9
9	Stems procumbent	10
-	Stems erects or ascending	11
10	Leaflets membranaceous, base acute, stems copiously hirsute	<i>E. prorepens</i> Benth.
-	Leaflets thin-coriaceous, base obtuse or subcordate (rare acute), stems sparsely pilose	<i>E. glaziovii</i> Harms
11	Plants with caducous leaves (or nearly so) when fertile	<i>E. defoliatum</i> Benth.
-	Plants with persistent leaves when fertile	12
12	Flowers 10–15 mm long	<i>E. tozziae</i>
-	Flowers 21–30 mm long	13
13	Leaflets obovate, silvery-pilose on the abaxial surface, contrasting with rufous-pubescent veins, base acute or obtuse	<i>E. riedelli</i> Benth.
-	Leaflets elliptic, rufous-pubescent on the abaxial surface, not contrasting with the veins, base mostly cordate	<i>E. longiflorum</i> Benth.
14	Leaflets usually less than five times longer than wide	15
-	Leaflets usually more than five times longer than wide	20
15	Stems glabrescent or cinereous to whitish pubescent	16
-	Stems yellowish, rufous- or ferruginous-pubescent	18
16	Plants with leaves only near the branch apex at anthesis	<i>E. hatschbachii</i> Fort.-Perez & G.P. Lewis
-	Plants with scattered leaves throughout the branch length or leaves caducous at anthesis	17
17	Stipules caducous; leaves caducous at anthesis	<i>E. congestum</i> Benth.
-	Stipules persistent; leaves persistent at anthesis	<i>E. floribundum</i> Benth.
18	Leaflets oblong-lanceolate with parallel secondary veins	<i>E. pycnanthum</i> Benth.
-	Leaflets ovate, obovate, elliptic to orbicular, without parallel secondary veins	19
19.	Plants erect, densely rufous-pilose or ferruginous-pubescent	<i>E. rufum</i> (Kunth) G. Don
-	Plants prostrate, yellow-pubescent	<i>E. campestre</i> Benth.
20	Leaflets elliptic to narrowly elliptic, the standard with a retuse apex	<i>E. tacuarembense</i> Arechav.
-	Leaflets linear, lanceolate or rarely narrowly elliptic; the standard with an apiculate apex	21
21	Stems whitish to cinereous-pubescent	<i>E. strictum</i> Benth.
-	Stems ferruginous or rufous-pubescent	22
22	Racemes with 4–5 flowers	<i>E. crinitum</i> (Kunth) G. Don
-	Racemes with more than 8 flowers	<i>E. longifolium</i> Benth.

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References

- Bentham, G. (1859) Leguminosae I. In: Martius, C.F.P. & Eichler, A.G. (Eds.) *Flora Brasiliensis*, vol. 15. no. 2. F. Fleischer, Leipzig, pp. 524.
- De Candolle, A.P. (1825) *Rhynchosia* sect. *Eriosema*. *Prodromus Systematis Naturalis Regni Vegetabilis* 2: 388.
- Desvaux, N.A. (1826) *Euriosma*. *Annales des Sciences Naturelles (Paris)* 9: 421.
- Fortuna-Perez, A.P., Lewis, G.P., Cândido, E.S., Bezerra, L.M.P.A. & Tozzi, A.M.A. (2013) *Eriosema hatschbachii* (Leguminosae, Papilionoideae), a new species from Minas Gerais, Brazil. *Kew Bulletin* 68: 641–645.
<http://dx.doi.org/10.1007/s12225-013-9471-z>
- Fortunato, R.H. (2014) *Eriosema* in *Lista de Espécies da Flora do Brasil*. Jardim Botânico do Rio de Janeiro. Available from: <http://reflora.jbrj.gov.br/jabot/floradobrasil/FB29632/> (accessed: 01 August 2014).
- Grear, J.W. (1970) A revision of the American species of *Eriosema* (Leguminosae-Lotoideae). *Memoirs of the New York Botanical Garden* 20(3): 1–98.
- IUCN (2010) *The IUCN red list of threatened species*, version 2010.4. IUCN Red List Unit, Cambridge. Available from: <http://www.iucnredlist.org/> (accessed: 20 April 2011).
- Lewis, G.P. (1987) *Legumes of Bahia*. Royal Botanic Gardens, Kew, 369 pp.
- Lewis, G.P. & Owen, P.E. (1989) *Legumes of the Ilha de Maracá*. Royal Botanical Gardens, Kew, 88 pp.
- Rogalski, L.D. & Miotto, S.T.S. (2011) O gênero *Eriosema* (DC.) Desv. (Leguminosae-Papilionoideae) nos estados do Paraná e Santa Catarina, Brasil. *Revista Brasileira de Biociências* 9(3): 350–370.