NEW SPECIES OF VERNONIEAE (ASTERACEAE). II.

FIVE NEW SPECIES OF VERNONIA FROM BAHIA

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Brazil is probably the primary center of diversity for the tribe Vernonieae. The genus Vernonia is particularly well-represented with over 150 described species. The numerous species make identification of specimens difficult, even without the complication of the inevitable undescribed species. Repeated efforts have failed to obtain names for many species, and five of these, all from Bahia, are treated here. These species all share inflorescence types with elongate cymes and anther appendages lacking glands, but they fall into two subgroups on the basis of inflorescence-shape and pollen surface-structure.

Vernonia harleyi and V. mattos-silvae have the heads congested on distinctly scorpioid branches and the pollen is spinulose and weakly lophorate. In V. morii, V. nobilis and V. persericea the branches of the inflorescence are nearly straight or fractiflexed with heads 1-2 at each isolated node, and the pollen is strongly lophorate with the crests rather evenly fringed with numerous minute spines.

Vernonia harleyi H.Robinson, sp. nov.

Plantae suffruticosae vel fruticosae mediocriter ramosae ad 1.5 m altae. Caules dense breviter albo-tomentosi distincte 5-angulati. Folia alterna, petiolis distinctis 5-25 mm longis; laminae ovatae vel oblongo-ovatae plerumque 5-10 cm longae et 2.5-6.0 cm latae base rotundatae vel subtruncatae margine distincte crenatae vel duplo-crenatae apice obtusae supra in sicco atro-virides subtiliter rugulosae albo-pilosulae subtus dense breviter albo-tomentosae et dense glandulo-punctatae, nervis secundariis utrinque ca. 6 plerumque 45° ascendentibus. Inflorescentiae multo ramosae, ramis valde scorpioideo-cymosae dense albo-tomentosis. Capitula congesta 2-3-seriata sessilia 4-5 mm alta et ca. 3 mm lata, bracteis subinvolucralibus minutis indistinctis ca. 1 mm longis subulatis; squamae involucri ca. 20 bi-tri-seriatae non patentes oblongae 1.5-3.0 mm longae plerumque 1 mm latae apice breviter acutae extus dense albo-tomentosae. Flores ca. 20 in capitulo. Corollae lavandulae ca. 4 mm longae extus parce glanduliferae, tubis ca. 2 mm longis superne infundibularibus, faucis 0.5-0.7 mm longis, lobis 1.3-1.5 mm longis ca. 0.4 mm latis superne dense pilosulis, pilis uniseriatis in cellulis apicalibus elongatis basilaribus brevibus; thecae antherarum ca. 1.3 mm longae inferne breviter acutae; appendices

antherarum ovatae ca. 0.3 mm longae et 0.15 mm latae non glanduliferae. Achaenia ca. 1.2 mm longa dense breviter setifera; setae pappi ca. 30-32 plerumque 2.5 mm longae, setae in seriebus exterioribus numerosae anguste lineares 0.3-0.5 mm longae. Grana pollinis ca. 30-35 µm in diam. indistincte lophorata spinulosa.

TYPE: BRASIL: Bahia: 19.5 km SE of the town of Morro do Chapeu on the BA052 road to Mundo Novo, by the Rio Ferro Doido, with water worn horizontally-bedded sandstone at soil surface, with damp sand, sedge marsh, exposed rock & waterfall. Vegetation open scrub to closed low woodland in the drier areas. Alt. ca. 900 m. 2.3.77. Harley no. 19296 (Holotype US). PARATYPES: BRASIL: Bahia: Rio do Ferro Doido, 19.5 km SE of Morro do Chapeu on the BA 052 highway to Mundo Novo. Other data as in 19296. Shrub to ca. 1 m with slightly resinous-scented leaves. Leaves rugose, dark green above, white-tomentose beneath. Phyllaries grey-green. Corollas bluish-purple. 1 March 1977. Harley 19184 (GA, US); Município de Maracás. Rod. BA 026, a 6 km a SW de Maracás. Afloramento de rocha granítica. 900 m de altitude. Folha SD-24 (14-40a). Subarbusto, 1.5 m de altura. Flores lilás. 26 Abril 1978. Mori et al. 9933 (US).

In the distinctly scorpioid-cymose branches of the inflorescence the new species resembles Vernonia scorpioides Pers. but the distinctly crenulate leaf margins, the dense white tomentum, the obtuse leaves, and the short-acute involucral bracts are all different.

Vernonia mattos-silvae H.Robinson, sp. nov.

Plantae fruticosae mediocriter ramosae 1 m altae. Caules fulvescentes teretes striati vix angulati dense cinereo-puberuli vel pilosuli. Folia alterna, petiolis 1.0-2.5 cm longis; laminae ovatae vel anguste ovatae plerumque 5-8 cm longae et 1.5-3.0 cm latae base anguste cuneatae vel longe acuminatae margine multo serrulatae apice anguste acuminatae supra in sicco atro-virides parce puberulae subtus cinereo-subtomentosae subdense glandulo-punctatae, nervis secundariis utrinque ca. 5 plerumque 50-60° ascendentibus. Inflorescentiae multo ramosae, ramis valde scorpioideo-cymosae sordide subtomentosis. Capitula congesta 2-3-seriata sessilia 6-7 mm alta et 3-4 mm lata, bracteis subinvolucralibus linearibus attenuatis 4-5 mm longis; squamae involucri ca. 20 ca. triseriatae vix patentes lanceolatae 2-5 mm longae base 1.0-1.5 mm latae apice longe attenuatae margine et extus sericeae apice subglabrae. Flores ca. 15 in capitulo. Corollae lavandulae 5-6 mm longae extus inferne glabrae, tubis 2.5-3.0 mm longis superne infundibularibus, faucis ca. 1 mm longis extus parce glanduliferis, lobis ca. 2 mm longis et 0.4 mm latis extus superne parce setiferis et glanduliferis, pilis uniseriatis in cellulis apicalibus elongatis; thecae antherarum ca. 1.5 mm longae inferne breviter acutae; appendices antherarum oblongo-lanceolatae breviter acutae ca. 0.5 mm longae et 0.18 mm latae non glanduliferae. Achaenia ca. 1.3-1.- mm longa parce breviter

setifera; setae pappi ca. 25-30 plerumque 4 mm longae, squamae exteriores in fimbriis brevibus 0.10-0.15 mm longae. Grana pollinis ca. 35 µm in diam. indistincte lophorata spinulosa.

TYPE: BRASIL: Bahia: Município de Macarani km 18 da Rod. Mai quinque / Itapetinga. Faz. Lagoa. Região de mata Mesófila. Pastaria. N.V.: Caminho-de-roça prêto. Arbusto, 1 m de altura. Inflorescência lilás. 2 agôsto 1978. L.A.Matto Silva, T.S. dos Santos & J.L.Hage 182 (Holotype US).

Vernonia mattos-silvae is evidently close to V. scorpioides Pers., showing the distinctly scorpioid branches of the inflorescence. The new species is most distinct by the long-attenuate tips of the subinvolucral and involucral bracts, the sparse pubescence of the achenes and corolla lobes, and the greatly reduced outer series of the pappus. The bases and tips of the leaf blades are also more narrowly acuminate. The pubescence and leaf margins place the new species closer to V. scorpioides than to V. harleyi n. sp.

Vernonia morii H.Robinson, sp. nov.

Plantae fruticosae mediocriter ramosae ad 2 m altae. Caules brunnescentes teretes vel subteretes striati inferne tenuiter arachnoideo-tomentosi superne sparse vel dense obtuse hirtelli. Folia alterna, petiolis brevibus vel nullis inferioribus interdum ad 1 cm longis; laminae ellipticae vel elliptico-ovatae plerumque 6-11 cm longae et 2.5-4.5 cm latae base cuneatae vel breviter acuminatae margine irregulariter subundulatae vel minute serrulatae apice breviter argute acuminatae supra saepe rugulosae sparse pilosae et scabridae subtus sparse vel dense puberulae in nervis et nervulis priminulae, nervis secundariis utrinque ca. 8 plerumque 60-70° patentibus leniter arcuatis. Inflorescentiae pauce vel mediocriter ramosae, ramis vix arcuatis sparse vel dense obtuse hirtellis, bracteis foliiformibus ad 8 cm longis et 4 cm latis supra scabris vel dense pilosis subtus plerumque dense puberulis. Capitula remota uniseriata sessilia vel subsessilia axillaria vel extra-axillaria; involucra late campanulata plerumque 7-10 mm lata et 7-12 mm longa superne non post anthesin constricta; squamae involucri brunnescentes ca. 65-75 ca. 7-seriatae plerumque appressae 1.5-10.0 mm longae et base 1-3 mm latae margine dense tenuiter fimbriatae extus sparse sericeae vel puberulae et sparse glanduliferae saepe glabrescentes, bracteae exteriores ovato-lanceolatae argute acutae interiores sensim oblongo-lanceolatae obtusae vel retusae et mucronatae, bracteae interiores superne utrinque densius scabridulae. Flores 20-30 in capitulo. Corollae plerumque eburnae vel albae interdum lavandulae plerumque 11-12 mm longae extus glabrae, tubis 6-7 mm longis superne anguste infundibularibus, faucis ca. 1 mm longis, lobis ca. 3.5 mm longis et 0.6 mm latis margine superne sparse piliferis, pilis uniseriatis in cellulis apicalibus elongatis tenuibus; thecae antherarum ca. 3.5 mm longae inferne obtusae; appendices antherarum ovato-lanceolatae subacutae ca. 0.5 mm longae et 0.2

mm latae non glanduliferae. Achaenia 3.5-4.0 mm longa 10-costata in costis glabra inter costis glandulifera et sparse appresse setifera; setae pappi facile deciduae ca. 50-55 et 7-10 mm longae inferne tenues vix contiquae superne mediocriter incrassatae et angulatae, squamae exteriores numerosae distinctae lineares plerumque 2.0-3.5 mm longae. Grana pollinis ca. 45 µm in diam valde lophorata, cristis minute multo spiniferis, spinis majoribus nullis.

TYPE: BRASIL: Bahia: Município de Maracás. Rod. BA 026, a 6 km a SW de Maracás. Afloramento de rocha granítica. 900 m de altitude. Folha SD - 24 (14-40a). Arbusto 1.5 m de altura. Flores brancas. Vegetaçao secundaria. 26 Abril 1978. Mori et al. 9959 (Holotype US). PARATYPES: BRASIL: Bahia: Saida de Itiruçu / Maracás. Arb. de 2 m alt., fl. em capítulo verde, estames brancos. 20/05/969. J.A. de Jesus & T.S.Santos 440 (US); Encruzilhada, margem do Rio Parod, Mata Cipó. Planta de 1 m altura; flores cremes; involucro verde. 23.5.1968. R.P.Belem 3610 (US); 19.5 km SE of the town of Morro do Chapeu on the BA 052 road to Mundo Novo, by the Rio Ferro Doido, with water worn horizontally-bedded sandstone at soil surface, with damp sand, sedge marsh, exposed rock & waterfall. Vegetation: open scrub to closed low woodland in the drier areas. Alt. ca. 900 m. Subshrub to 60 cm. Leaves scabrid, rugose, yellow-green above, pale beneath. Phyllaries pale green. Florets pale lilac. 2.3.77. Harley 19242 (US); Ca. 1 km N of Agua de Rega, road to Cafarnaúm, elev. ca. 1000 m, Acacia caatinga on slopes. Subshrub ca. 1 m tall. Heads cream. 28 February 1971. H.S.Irwin, R.M.Harley & G.L.Smith 31251 (US); same data, Shrub ca. 2 m tall. Irwin et al. 31260 (US).

Vernonia morii seems rather common in the eastern half of Bahia in spite of the previous lack of a name. The closest relative may be V. ammophila Gardn. of central Minas Gerais westward into Goyas. The latter species differs by the usually obtuse to rounded leaf-tips, the usually magenta-colored corollas, the more densely tomentose stems, the more glabrous somewhat exsculpate upper leaf surfaces, and the coarser more crowded and sharply edged pappus setae. The squamae of the outer pappus are usually broader and seem somewhat more persistent. Also, the inner involucral bracts lack the tendency for retuse and mucronate tips. One specimen of V. ammophila (Classen, Minas Gerais) has been seen showing more acute leaf-tips and slender marginal hairs on the corolla lobes reminiscent of the new species, and some integradation may occur between the species in that area.

Another close relative is V. rugulosa Sch.Bip. ex Baker of Minas Gerais. No material has been seen but an excellent photograph of the Berlin type distributed by the Field Museum shows the undulate membraneous tips of the larger involuvral bracts after which the species was named. There is no tendency toward such differentiated tips of the bracts in any material seen of the new species. The photograph and description indicate that

V. rugulosa has generally more petiolate leaves and glabrous achenes, but these features need to be checked when more material is available.

Vernonia nobilis H.Robinson, sp. nov.

Plantae fruticosae divaricate ramosae ad 3 m altae. Caules brunnescentes teretes pauce striati sparse albo-puberuli in nodis inferioribus non deflecti. Folia alterna, petiolis 3-5 mm longis; laminae ovatae 2-5 cm longae et 1.4-2.4 cm latae base rotundatae margine subintegrae vel irregulariter undulatae apice acutae vel perbreviter acuminatae supra virides rugulosae parce puberulae subtus sordide tomentosae vel lanatae et glandulo-punctatae, nervis secundariis utrinque 6-7 mediocriter ascendentibus. Inflorescentiae diffusae foliosae inferne saepe triramosae, ramis fractiflexis. Capitula in axillis solitaria sessilia 1.5-1.8 cm alta et ca. 0.8-2.0 cm lata base leniter tomentosa; squamae involucri ca. 75-80 multiseriatae lanceolatae 2-13 mm longae base 0.7-1.8 mm latae superne subulatae et patentes vel reflexae apice argute acutae extus rubrotinctae dense appresse pilosulae. Flores 35-40 in capitulo. Corollae violaceae 11-16 mm longae praeter apicem glabrae, tubis 6-8 mm longis angustis superne infundibularibus, faucis ca. 1 mm longis, lobis saepe inaequalibus plerumque 4-5 mm longis et 0.5 mm latis superne dense antrorse spiculiferis et parce micro-piliferis, spiculis unicellularibus; thecae antherarum 3.5-4.5 mm longae inferne acutae; appendices antherarum lanceolatae ca. 0.8 mm longae et 0.25 mm latae non glanduliferae margine plerumque anguste inflexae. Achaenia ca. 3 mm longa dense longe setifera; setae pappi ca. 30-35 et 10-12 mm longae, setae in seriebus exterioribus numerosae anguste lineares plerumque 2 mm longae. Grana pollinis ca. 45 µm in diam. valde lophorata, cristis minute multo spinuliferis, spinis majoribus nullis.

TYPE: BRASIL: Bahia: Vicinity of Machado Portello. June 19-23, 1915. J.N.Rose & P.G.Russell 19966 (Holotype US). PARATYPES: BRASIL: Bahia: Same data as holotype. Rose & Russell 19906 (US); Piauhy - Ceará: Picos to Campo Salles. Shrub about 3' high. Brushy borders. April 8-11, 1933. J.R.Swallen 4278 (US).

Vernonia nobilis has been found in two widely separated localities, one in the interior of Piauhy or adjacent Ceará, and the other in eastern Bahia near Salvador. Such a potential range would suggest other collections exist, but none have been seen and no described species of Vernonia seems particularly close. The specialized interests of the collectors in cacti and grasses might indicate that specialized habitats are involved.

It is possible that V. nobilis is closely related to the recently described Mattfeldanthus mutisioides H.Robins. & King of Bahia. The corollas of the former seem more reddish than most Vernoniae though not as reddish as indicated for Mattfeldanthus. The corolla lobes are somewhat unequal, but no pattern is evident as in Mattfeldanthus where the outer four lobes of the peripheral

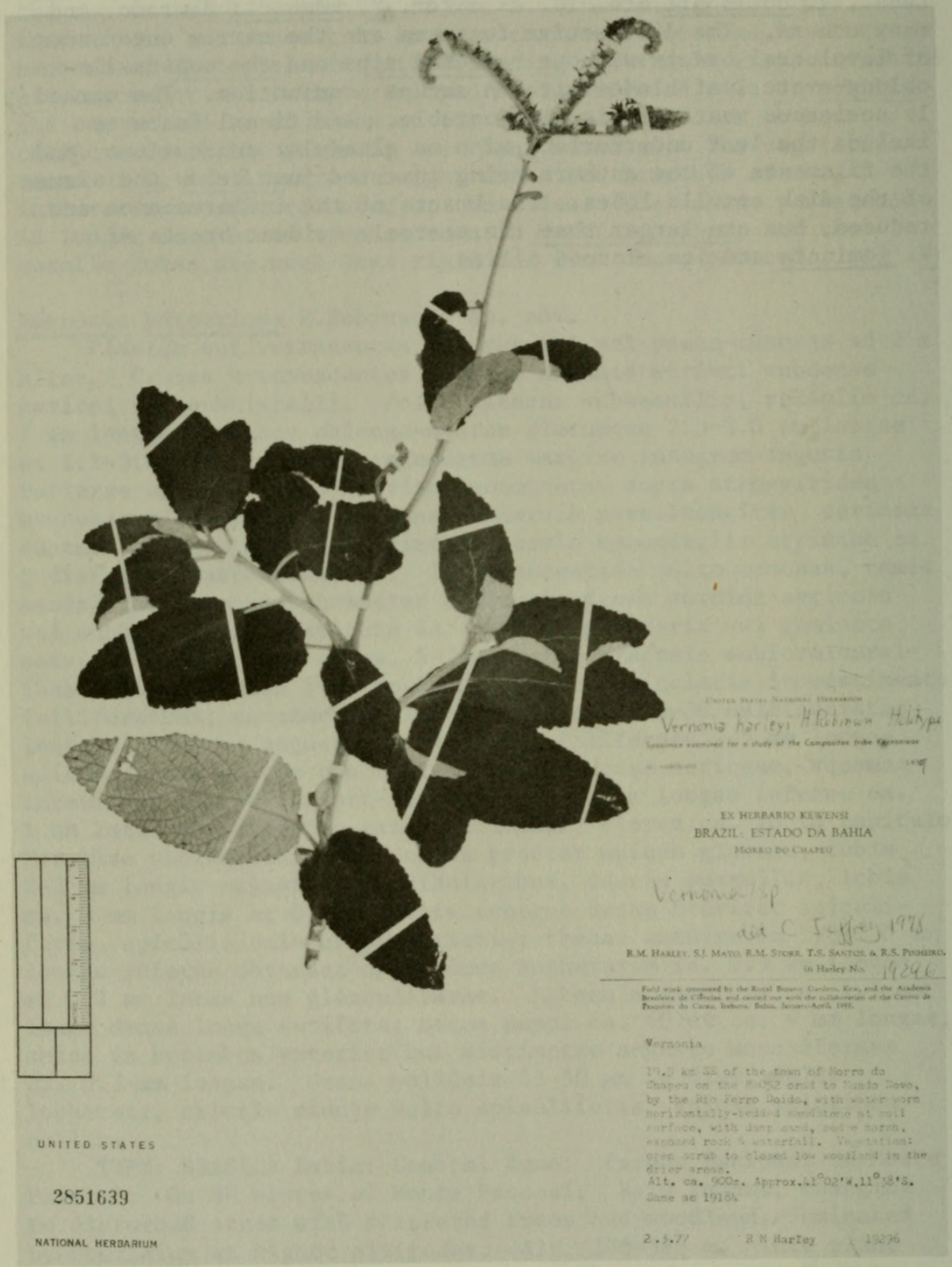
flowers are always shorter. The most obvious resemblance between the two is in the branching of the inflorescence. Multiple innovations are present in both, a character not seen in other members of Vernonia. In Mattfeldanthus the single extra branch is present under all fully developed heads observed. In V. nobilis the one or two basal nodes of the inflorescence seem to have characteristically three or even four branches. The vegetative stems of V. nobilis are straight while the branches of the inflorescence are deflected at the nodes. The achene pubescence is longer in the new species than in Mattfeldanthus, and the corolla lobes are much less rigid and less sharp-pointed.

Vernonia persericea H.Robinson, sp. nov.

Plantae suffrutescentes inferne non vel pauce ramosae ad 2 m altae. Caules brunnescentes teretes anguste striati subdense sericei vel subhirtelli. Folia alterna subsessilia, petiolis ca. 1 mm longis; laminae oblongo-ovatae plerumque 2.5-5.0 cm longae et 1.2-3.0 cm latae base rotundatae margine integrae anguste reflexae apice abrupte breviter acuminatae supra atro-virides evanescentiter pilosae inferne in nervis persistentiter sericeae subtus perdense sordide sericeae, nervis secundariis utrinque ca. 6 distaliter ascendentibus. Inflorescentiae multo ramosae, ramis serialiter cymosis subtiliter deflectis dense sordide sericeis vel subhirtellis. Capitula in seriebus solitaria vel geminata sessilia 7-8 mm alta et ca. 5-7 mm lata, bracteis subinvolucralibus anguste ovatis 5-10 mm longis minute apiculatis in vestimento foliiformibus; squamae involucri exteriores 25-30 multiseriatae leniter patentes anguste lineares vel filiformes 2-5 mm longae apice anguste acutae non reflexae extus dense sericeae, squamae interiores ca. 10 lineari-lanceolatae 6-7 mm longae inferne ca. 1 mm latae apice acutae extus sericeae. Flores ca. 10 in capitulo. Corollae violaceae 5-6 mm longae praeter apicem glabrae, tubis 2-3 mm longis anguste infundibularibus, faucis subnullis, lobis ca. 3 mm longis et 0.5 mm latis superne dense breviter spiculiferis, spiculis uni- et bi-seriatis; thecae antherarum 1.8-2.0 mm longae inferne obtusae; appendices antherarum ca. 0.3 mm longae et 0.2 mm latae non glanduliferae. Achaenia immatura ca. 1.5 mm longa dense longe setifera; setae pappi ca. 40 et ca. 4 mm longae, setae in seriebus exterioribus distinctae anguste squamiformes ca. 0.5 mm longae. Grana pollinis 45-50 µm in diam. valde lophorata, cristis minute multo spinuliferis, spinis majoribus nullis.

TYPE: BRASIL: Bahia: Coastal Zone. Parque Nacional de Monte Pascoal. On NW slopes of Monte Pascoal. Rain forest, changing to disturbed areas with scattered trees and woodland, dominated by Pteridium at higher altitudes. Alt. 200-586 m. This plant growing at summit of mountain among shrubs and trees. Herb to 2 m. Leaves slightly coriaceous, mid-green above, pale below with pale buff hairs. Corolla pale magenta. 12 Jan. 1977. Harley et al. 17865 (Holotype US).

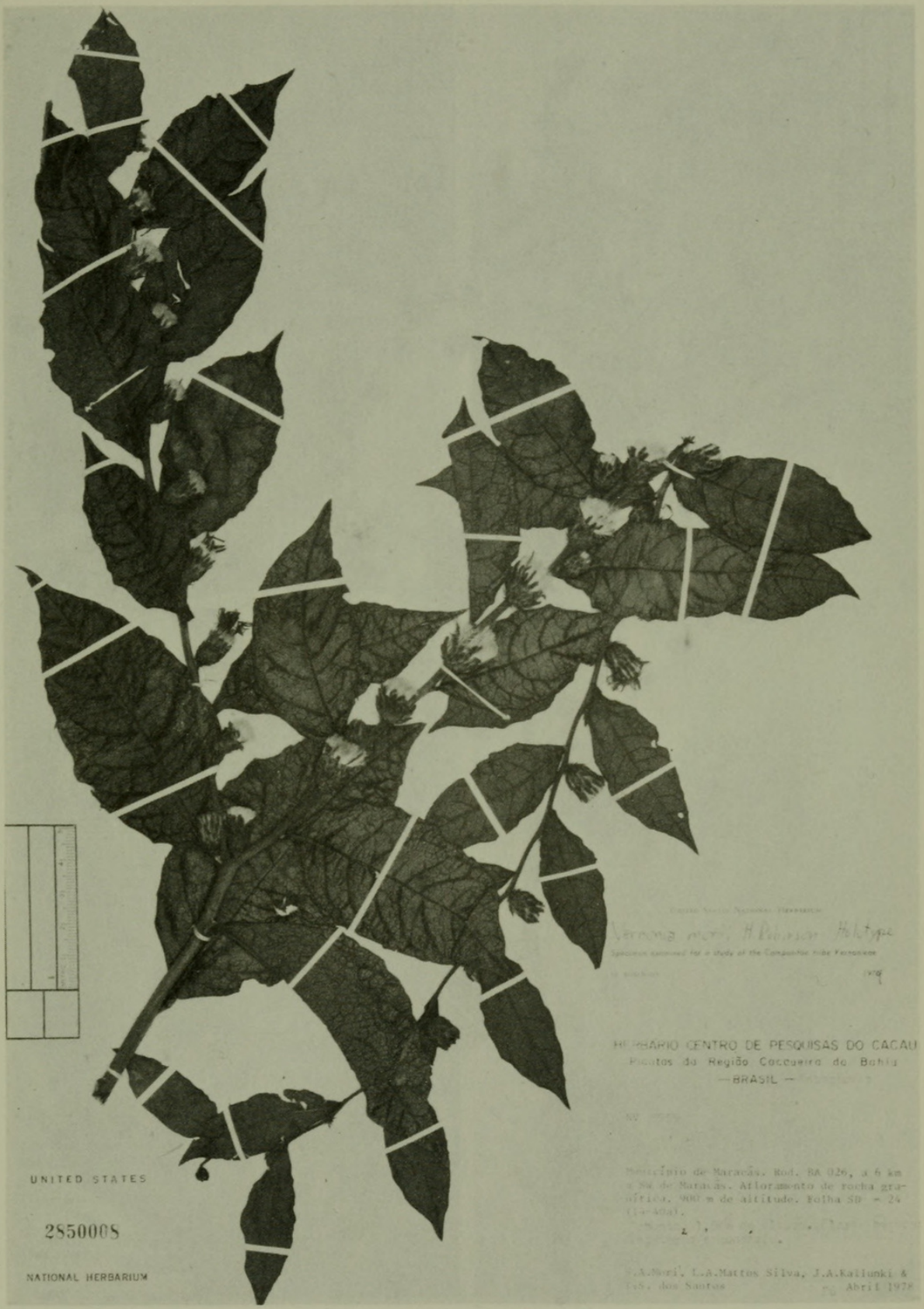
Vernonia persericea is one of a group including V. geminata Less., V. coulsonii Sch.Bip. ex Baker, V. edmundii Barroso, and many others. The distinctive features are the narrow outer rows of involucral bracts without reflexed tips and the subsessile oblong-ovate leaf blades with an abrupt acumination. The markedly sericeous vestiture is also notable. Additional features include the leaf undersurface with no glandular punctations, and the filaments of the anthers being inserted just below the sinues of the disk corolla lobes. The bracts of the inflorescence are reduced, but are larger than the scarcely evident bracts of V. geminata and its closest allies.



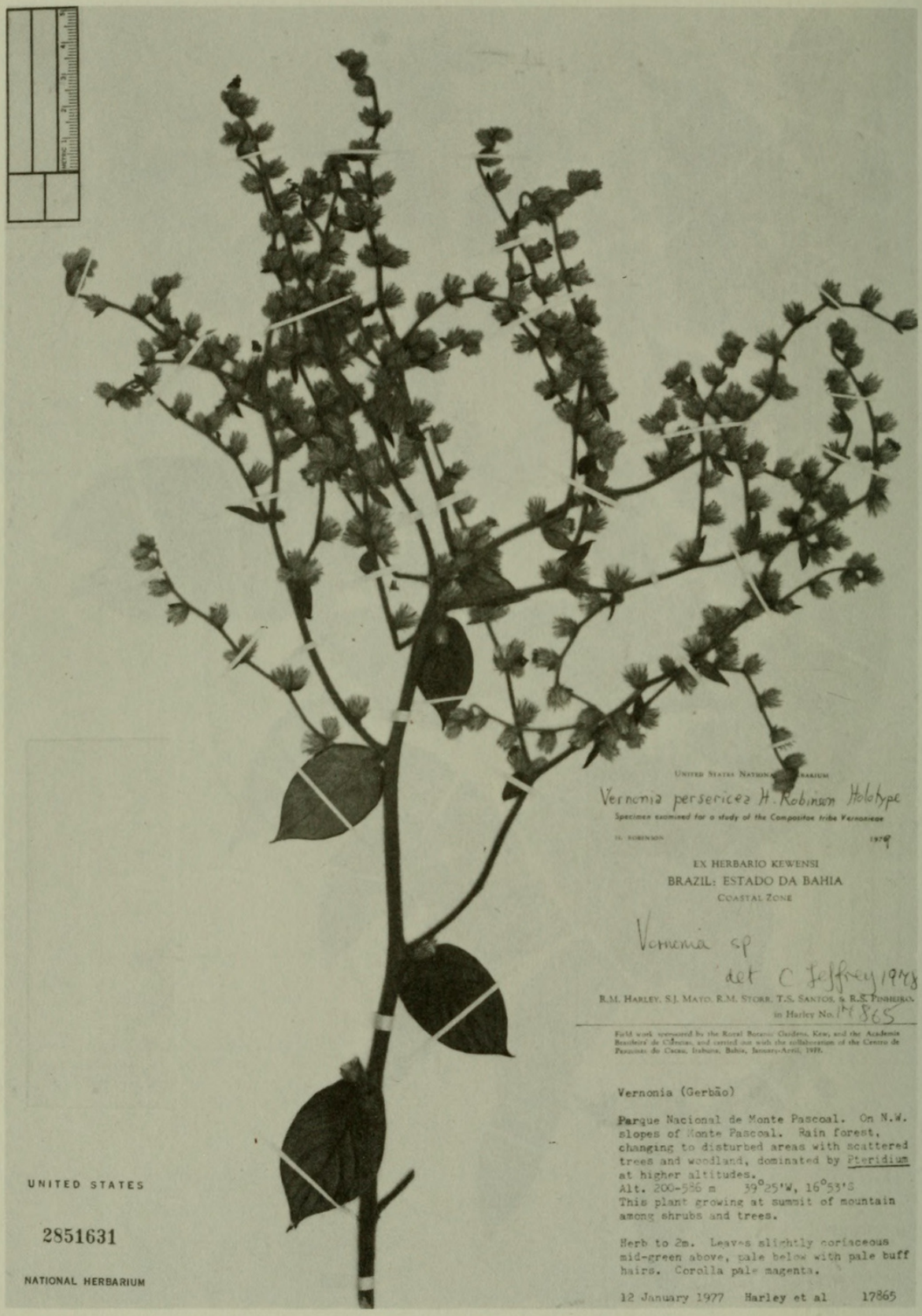
Vernonia harleyi H.Robinson, Holotype, United States National Herbarium. Photos by Vistor E. Krantz, Staff Photographer, National Museum of Natural History.

Vernonia mattos-silvae H.Robinson, Holotype, United States National Herbarium.

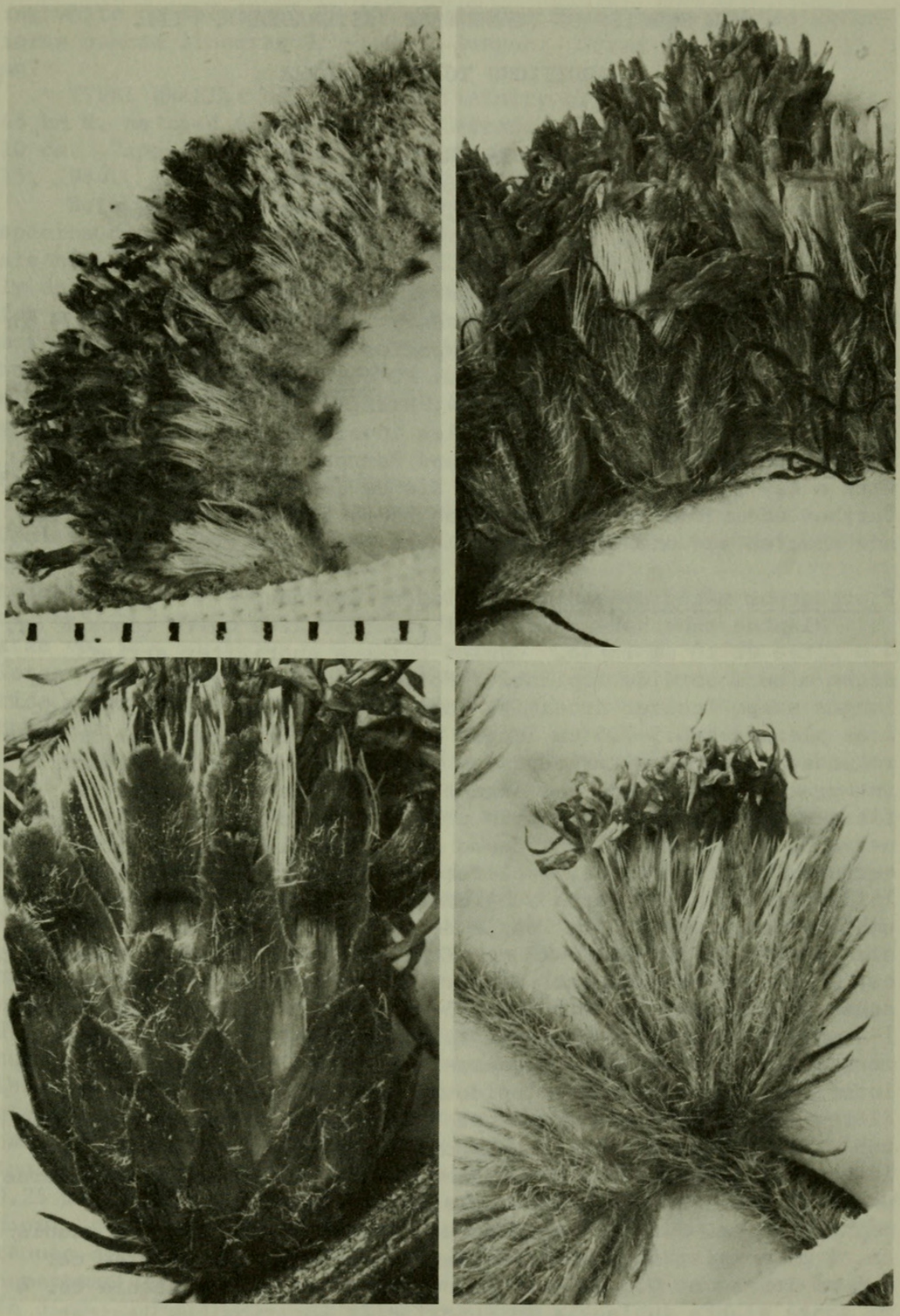
Vernonia nobilis H.Robinson, Holotype, United States National Herbariam.



Vernonia morii H.Robinson, Holotype, United States National Herbarium.



Vernonia persericea H. Robinson, Holotype, United States National Herbarium.



Vernonia, enlargements of heads: Top left. *V. harleyi*. Top right. *V. mattos-silvae*. Bottom left. *V. morii*. Bottom right. *V. persericea*.