A number of new species have been encountered in recent years which belong to various genera in the subtribe Galinsoginae of the Heliantheae. In each of the cases, the traditional generic limits have been a problem, and some tentative solutions are offered. The three genera in which the new species are placed, are as follows.

**Alloispermum**

During the initial listing of the species when the genus was resurrected from the synonymy of Calea (Robinson, 1978a), the concepts of the South American species were particularly inadequate. The area seemed to be dominated by a highly variable *A. caracasanum* with two minor segregates. A single specimen collected by Lehmann in Ecuador and some laxly cymose material collected by Cuatrecasas in Colombia were regarded as only extremes of *A. caracasanum*, while *A. pachense* was kept separate. Since that time, one species, *A. steypemarkii*, with extremely long-pointed involucral bracts, has been described from Venezuela (Robinson, 1978b), two specimens have been seen from a widely disjunct area in southern Peru, the Cuatrecasas collection has been recognized as a first Colombian record of the otherwise Ecuadorian *A. sodiroi*, and the Lehmann collection from Ecuador has been re-examined and found to be distinct. The concepts of *A. lindenii* (Sch.Bip. ex Wedd.) H.Robins. and *A. steypemarkii* H.Robins. remain unchanged, but the studies have indicated the need for the following two new species, new combination and new synonymy.

**Alloispermum caracasanum** (H.B.K.) H.Robins. is re-interpreted to include *C. pachensis* Hieron. The latter was originally described for material that lacked ray flowers. Such discoid forms have sometimes been treated as *Calea caracasana* forma discoida B.L.Robins. These occur sporadically throughout the range of the species, and they seem best treated at the level of a forma.

There are more significant variations in *A. caracasanum*. The typical element has five rays in the head and glabrous outer
surfaces of the involucral bracts. Specimens with 8 rays in the heads and pubescent outer surfaces of the involucral bracts are rather common in Colombia, but the two characters are not always correlated.

**Alloispermum lehmanni** H.Robinson, sp. nov.

Plantae subscandentes? mediocriter ramosae. Caules brunnescentes teretes sparse hirsuti, pilis sub nodis densioribus. Folia opposita, petiolis plerumque 1-2 mm longis; laminae lanceolatae ad 5-6 cm longae et 1.0-1.7 cm latae base angustae rotundatae vel breviter obtusae margine subintegrae apice argute acuminatae supra dense scabridulae subtus subdense pilosae fere ad basem trinervatae,nervis secundariis ad marginem subparallelibus. Inflorescentiae laxe corymbosae, ramis 3.5-5.5 cm longis pilosis, pilis erecto-patentibus superioribus densioribus. Capitula ca. 7 mm alta sine radiis ca. 8 mm lata; squamae involucri ca. 20 ca. 3-seriatae subcoriaceae marginaliter rubro-tinctae ovatae vel late oblongae plerumque 3-4 mm longae et 2.0-2.5 mm latae apice rotundatae subscariosae extus glabrae; paleae scariosae suboblongae ca. 3 mm longae apice obtusae. Flores radii ca. 7; corollae albae? ca. 8 mm longae, tubis ca. 2 mm longis dense hispidulis, limbis oblongis ca. 6 mm longis et 4 mm latis apice valde trilobatae extus inferne pilosulis. Achaenia radii ca. 2 mm longa glabra; pappus nullus. Flores disci 25-30; corollae flavae 3.5-4.0 mm longae extus plerumque dense pilosulae, tubis ca. 1.2 mm longis, faucis abrupte campanulatis ca. 1.7 mm longis superne sparse pilosulis, lobis 0.6-0.7 mm longis et latis; thecae antherarum ca. 1.2 mm longae, cellulis endothecialibus in parietibus tranversalibus 3-4-noduliferis; appendices antherarum non glanduliferae. Achaenia disci ca. 2.5 mm longa sparse setifera; squamae pappi ca. 15 subulatae plerumque 3.0-4.8 mm longae. Grana pollinis 30-32 µm in diam.

**TYPE:** ECUADOR: Tungurahua: Am Tungurahua-Volcan. 2000 m, 30.10.1879. Lehmann 330 (Holotype US). The specimen was determined as *Galea integrifolia* Hemsl. by Klatt.

**Alloispermum lehmanni** is most notably distinct by the small disk corollas and short paleae. The single specimen also shows a more flexuous habit and more elongate branches of the inflorescence than is characteristic of the related *A. caracasanum*. The type locality on the Volcan Tungurahua seems distinctly isolated from the ranges of *A. caracasanum* and *A. sodiroi* to the north.

**Alloispermum sodiroi** (Hieron,) H.Robinson, comb. nov. _Calea sodiroi_ Hieron., Bot. Jahrb. 29: 51. 1900. _Sabazia sodiroi_ (Hieron,) Turner, Wrightia 5 (8): 305. 1976. The species is most obviously distinct from *A. caracasanum* by the strongly cymose lax inflorescence with the obviously older terminal heads being greatly over-topped by the lateral branches. Dr. Cuatrecasas also informs me that his recent collection of an 8-rayed form from Cundinamarca, Colombia (Cuatrecasas & Jaramillo 28792), is
a more herbaceous subscandent plant. In contrast, *A. caracasanum* is definitely a shrub. The paleae of the latter are also less toothed or lobed.

The transfer of the species from *Calea* to *Sabazia* by Turner (1976) raises the question of why this species was singled out from among its relatives such as *A. caracasanum*, but it also points up the serious problem of generic distinction between *Sabazia* and *Alloispermum*. A brief review of the species has not shown me any simple answer with an obvious point of separation, but it has left me with the impression of a rather uniform *Alloispermum* having larger plants, distinctly branching inflorescences, ray achenes always lacking a pappus while a pappus is normally present on the disk achenes, and endothelial cells with multiple thickenings. *Sabazia*, as represented by its type, *S. humilis* (H.B.K.) Cass. (Longpre, 1970), is a smaller herbaceous plant with a strong tendency toward solitary long-pedunculate heads, it has a pappus that is short or lacking, and has mostly single thickenings on the transverse walls of the endothelial cells. Problems arise in such species as *Sabazia palmeri* (A.Gray) Urbatsch & Turner of Mexico, which has the habit of *Alloispermum*, but has a distinct pappus on the ray achenes, and in *S. trianae* (Hieron.) Longpre of Colombia and *S. densa* Longpre of Costa Rica which have the habit of *Sabazia* but have the pappus and some other features of *Alloispermum*. It is not certain that the habit differences represent a single phyletic trend. The pollen sizes show a tendency to be larger in *Alloispermum*, but they are also larger in the southern species of *Sabazia*. The species of *Sabazia* from Mexico that have been examined, including *S. palmeri*, have small dense papillae on the inner surfaces of the disk corolla lobes. *Alloispermum* has consistently larger papillae on the lobes and has a uniform pubescence to the outer surfaces of the lobes. *Sabazia densa* and *S. trianae* also have larger papillae, though not exactly as in *Alloispermum*. *Sabazia acoma* (Blake) Longpre of Colombia has larger papillae, but differs by the lack of hairs on the outer surfaces of the disk corolla lobes.

I am not prepared to see such extremes as *Alloispermum* and typical *Sabazia* placed in the same genus. For the present, I have left in *Sabazia* all those species that lack the precise characters of *Alloispermum*, having either solitary long-pedunculate heads or a different form of pappus. For others who might favor a broader genus concept, it should be noted that the name *Alloispermum* has priority over *Sabazia*.

*Alloispermum weberbaueri* H. Robinson, sp. nov.

Plantae subscandentes suffruticosae ad 2 m altae mediocriter ramosae. Caules brunnescentes teretes leniter striati sparse hirsuti, pilis superioribus densioribus. Folia opposita, petiolis 3–8 mm longis; laminae lanceolatae 5.0–7.5 cm longae et 1–2 cm latae base obtuse vel acute cuneatae margine integrae vel remote serratae apice angustae acuminateae supra tenuiter pilosae subtus
Alloispermum weberbaueri is distinct among the South American species by the numerous rays in the heads. The rather lax inflorescence and the more scandent habit further distinguish the species from *A. caracasanum*. The paratype specimen is from the same region as the holotype and is obviously the same species, but it has no pappus on either the ray or disk achenes. The latter condition evidently represents that calvous-achened condition that occurs sporadically in the Asteraceae and which is characteristic of the ray achenes of all species presently placed in *Alloispermum*.

The species range in southern Peru is widely disjunct from other members of the genus. The nearest approach is *A. lehmannii* of central Ecuador.

Galinsoga

The genus has been revised recently by Canne (1977), and has been broadened to include such elements as *Sabazia trifida* Fay and *Tricarpha durangensis* Longpre. The genus is further extended here to include the following related new species from Venezuela.
Galinsoga macrocephala H.Robinson, sp. nov.

Plantae herbaceae annuæ? mediocriter ramosæ ca. 30 cm altae. Caules purpurascentes teretes leniter striati sparse albo-hirsuti. Folia opposita, petiolis 2-5 mm longis; laminae ovatae plerumque 12-20 mm longæ et 3-13 mm latae base obtuse cuneatae et perbreviter acuminatae margine multo serrulatae apice acutae vel breviter acuminatae supra in sicco atro-virides subtus pallidiores utrinque dense pilosae fere ad basem ascendentiter trinervatae. Inflorescentiae diffusæ læxe plerumque alterne ramosæ pauci-capitatae, ramis 9-27 mm longis hirtellis et stipitato-glanduliferis. Capitula late campanulata ca. 8 mm alta et 7-8 mm lata; squamae involucrali ca. 25 flavo-virides subimbricatae membranaceae late oblongae ca. 25 mm longæ et 0.5 mm latae superne et subne breviter puberulis; receptacula conica; paleae interiores minores scariosae facile decidue. Flores radii ca. 14; corollae rubro-purpurascentes ca. 6 mm longae, tubis 4.5 mm longis dense breviter hispidulis, limbis minute subquadratis ca. 1.5 mm longis et 1 mm latis apice distincte trilobatis. Flores disci ca. 25; corollae flavae 3.5-4.0 longae, tubis angustis 2.0-2.5 mm longis dense breviter hispidulis, faucis late infundibularibus ca. 1 mm longis inferne sparse hispidulis, lobis ca. 0.4 mm longis et 0.3 mm latis extus superne paucis breviter puberulis; thecae antherarum ca. 0.5 mm longæ; appendices antherarum angustæ ovalæ glabrae. Achaenia obovata ca. 2.7 mm longa et 0.7 mm lata glabra; setae pappi numerosæ fusiformes perfacile decidue plerumque 1.0-1.5 mm longæ. Grana pollinis 27-30 μm in diam.


The new species has the general habit of Galinsoga, and it keys to that genus in the partial key to the genera of the Galinsoginae by Canne (1978). Also, the short ray flowers are very reminiscent of the ray of G. quadriradiata R.& P., and the anthers are small as in other members of the genus (Powell, 1965). The readily deciduous setiform pappus of the new species differs from the forms traditionally included in the genus, but a similar form is found in one Mexican species, G. formosa Canne (=Sabazia trifida Fay), included in the genus by Canne (1977). The new species remains unique in the genus by the comparatively large size of the heads. The peripheral paleae do not form complexes with the inner involucral bracts as in typical Galinsoga.

The extremely deciduous nature of the pappus setae makes an exact count impossible. A guess would be about 10 per achene, and they are present on both the ray and disk achenes.

Tridax

After careful consideration, the following new species is placed in the genus Tridax.
Tridax moorei H.Robinson sp. nov.

Plantae herbaceae vel inferne lignosae perennes multo ramosae ad 12 cm altae. Caules pallide rubrescentes teretes albo-strigosi. Folia opposita, petiolis ca. 1 mm longis; laminae lineares 6-9 mm longae et ca. 1 mm latae base anguste cuneatae margine integrae apice anguste obtusae supra lucidae sparse strigoso-pilosae subtus anguste subcarnosae plerumque in nervis primariis et marginis strigoso-pilosae, nervis secundariis indistinctis subnullis. Inflorescentiae diffusa in ramis terminales unicapitatae, pedunculis plerumque 1-3 cm longis strigoso-pilosis. Capitula campanulata 7-8 mm alta et 5-6 mm lata; squamae involucri ca. 20 triseriatae subimbricatae membranaceae flavescentes vel in parte rubro-tinctae lanceolatae 2.5-5.5 mm longae plerumque 1.0-1.5 mm longae apice acutae margine subscariosae et laxe fimbriatae extus leniter striati et sparse pilosae; receptacula alte conica; paleae lineares ca. 5 mm longae. Flores radii ca. 8; corollae albae, tubis ca. 2.5 mm longis minute pilulosis, limbis oblongis ca. 5 mm longis et 2 mm latis apice distincte trilobatis. Flores disci ca. 30; corollae albissimae ca. 4.5 mm longae, tubis ca. 1 mm longis dense scabridulis, faucis cylindraceis vel anguste infundibularibus ca. 2.5 mm longis extus glabris, lobis triangularibus ca. 0.6 mm longis et 0.45 mm latis extus minute puberulis; thecae antherarum ca. 1.5 mm longae, cellulis endothelialibus in parietibus transversalibus uni-noduliferis; appendices antherarum non glanduliferae; ramis stylorum 1.0-1.3 mm longis. Achaenia ca. 2 mm longa dense setifera; setae pappi in achaeniis radii paucae breves plerumque 0.5 mm longae; setae pappi in achaeniis disci ca. 16 anguste subulatae plerumque 3.5-4.5 mm longae barbellatae vel subplumosae inferne aliquantum alatae. Grana pollinis ca. 30 µm in diam.


The Moore specimen has been held for a number of years as an undescribed member of the Galinsoginae because precise generic position was not clear. The barbellate to subplumose pappus setae and the more or less solitary heads might indicate Tridax, but the lack of inner lobes on the ray corollas and the lack of a gland on the anther appendage are unusual for that genus. In the partial key to the genera of the Galinsoginae by Canne (1978) the species falls into Sabazia, but the species does not fit into the concept of the latter genus derived from the present study of the Alloispermum-Sabazia relationship. A position in Tridax ultimately seems best, with the realization that a new genus may eventually need to be established for the species.
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