

## A SYNOPSIS OF THE GENUS *HOFFMANNSEGGIA* (LEGUMINOSAE)

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**Abstract:** The genus *Hoffmannseggia* Cav., now recognized as a monophyletic group distinct from *Caesalpinia* and *Pomaria*, consists of 22 species and is amphitropically distributed between North and South America, with 11 species in arid and semi-arid areas of the southwestern USA and adjacent Mexico, and 12 species in southern South America. Recent publications have provided a revision of *Hoffmannseggia* for North America, a resolved phylogeny, and an analysis of the biogeography of the genus, but there is to date no treatment of all of the taxa. Here we present a key to the genus and its closest relatives, a key to all of the recognized taxa, typification, distributional data for each species, selected specimens examined for the South American taxa, and notes where appropriate.

**Keywords:** *Caesalpinia*, *Caesalpinieae*, *Hoffmannseggia*, Fabaceae, Leguminosae.

**Resumen:** El género *Hoffmannseggia*, actualmente reconocido como un grupo monofilético distinto de *Caesalpinia* y *Pomaria* dentro de *Caesalpinieae*, consiste en 22 especies con distribución anfítropical en zonas semi-áridas y áridas de Norte y Sudamérica. De ellas, 11 especies se encuentran en el sudoeste de U. S. A. y norte de México; las otras 12 en América del Sur, creciendo en las zonas andinas y semidesérticas del Perú, Bolivia, Chile y Argentina. Recientes publicaciones por uno de los autores (B. B. S.) tratan de la revisión del género para América el Norte, su filogenia y análisis biogeográfico. De todas maneras aún quedan por tratar la totalidad de sus especies en conjunto. En esta sinopsis se presenta un panorama general del género, una clave para su separación de los géneros vecinos (*Balsamocarpon*, *Caesalpinia* s. l., *Pomaria*, y *Zuccagnia*) y otra para el reconocimiento de las especies, se tratan sus sinónimos y tipificaciones, iconografía, distribución y habitat, se cita material selecto examinado para los especies en América del Sur, y se realizan observaciones varias. Se reconocen 2 grupos o clados: uno Sufrutescente con 6 especies y otro de Herbáceas con 16 respectivamente; *H. pumilio* sería la única especie leñosa sudamericana. Se sinonimizan *H. stipulata* con *H. miranda*; *H. ternata* con *H. viscosa* y no se consideran rangos infraespecíficos para *H. trifoliata*, aceptando los mismos como variaciones dentro de la especie. Finalmente se ofrece un apéndice con los nombres y taxones vinculados con *Hoffmannseggia* a través del tiempo.

**Palabras clave:** *Caesalpinia*, *Caesalpinieae*, *Hoffmannseggia*, Fabaceae, Leguminosae.

Recent studies (Simpson and Miao, 1997; Lewis, 1998; Simpson et al., 2003) have shown that the genus *Caesalpinia* L. sensu Polhill (1994; Polhill and Vidal, 1981) is paraphyletic with respect to many genera in the *Caesalpinia* group. Among the genera now known to be distinct from *Caesalpinia*, although often confused with it in the past (Simpson et al., 2004), is *Hoffmannseggia*. *Hoffmannseggia* is considered here to consist of 22 species, amphitropically distrib-

uted with ten species restricted to North America, eleven species endemic to South America, and one widespread species, *H. glauca* (Ortega) Eifert, that occurs on both continents (Simpson et al., 2005). In 1979, Ulibarri revised the eight Argentine species of the genus, and in 1996 he provided a synopsis of both *Caesalpinia* and *Hoffmannseggia* for all of South America, but in many cases synonymies were incomplete. Recent molecular phylogenetic work (Simpson et

al., 2004) has indicated that one species (*Hoffmannseggia pumilio* (Griseb.) B. B. Simpson) formerly treated as a *Caesalpinia* belongs in *Hoffmannseggia*. In 1999 and 2000, Simpson revised the North America species of the genus. In view of the fact that the taxonomy of the genus has now stabilized, it seems appropriate to provide a synopsis of the entire genus. Consequently, we provide here a key to all of the taxa in the genus we currently recognize, typification, distributional data, notes, comments on possible hybridizations, and a list that provides the disposition of names that have figured in the taxonomic history of *Hoffmannseggia*.

Extensive lists of specimens examined

1. Small shrubs or perennial herbs, sometimes woody at the base; plants without spines; sepals persisting in fruit or very tardily and jaggedly deciduous (*H. microphylla* and *H. peninsularis*); pedicels never jointed; leaves without resin-secreting glands in depressions; rachises, and sepals with simple trichomes, multicellular linear glandular trichomes, or both; fruits compressed longitudinally, straight, arcuate, lunate, or obtrullate in outline; valves glabrous or with simple trichomes and/or glandular trichomes, not resin-coated  
..... *Hoffmannseggia*
1. Trees, woody shrubs, suffrutescent perennial herbs, or vines; plants often with spines; sepals cauducous leaving a ring at the base of the fruit or, if persisting, leaves with resin-secreting glands in depressions on both leaf surfaces; pedicels jointed or not; rachises and sepals with simple trichomes or peltate glandular trichomes; fruits elongate ("bean-like") compressed longitudinally, or cylindrical, or ovoid; valves glabrous or simply vestitured with non-glandular or glandular trichomes, sometimes with complex branching trichomes, or resin-covered (*Balsamocarpon*), or adorned with red-purple setae (*Zuccagnia*).
  2. Fruits cylindrical, covered with yellow-brown resin when mature; plants extremely spiny; young leaves borne on long shoots, adult leaves on brachyblasts (short shoots) ..... *Balsamocarpon*
  2. Fruits flattened, variously pubescent or spiny, or ovoid with red-purple setae on the valves; plants spineless or with scattered spines: leaves borne on long shoots.
  3. Leaves pinnate; fruits ovoid; valves with red-purple setae; both leaf surfaces dotted with sunken resin-secreting glands ..... *Zuccagnia*
  3. Leaves bipinnate; fruits elongate, compressed longitudinally; valves variously vestitured, glabrous, or spiny; leaves variably vestitured but not resinous.
    4. Small shrubs or suffrutescent perennial herbs; gynoecium and anthers nestled in an enlarged lowermost sepal; stigma lateral; fruits usually with black (when dry) punctate glandular trichomes, always with complex-branching trichomes ..... *Pomaria*
    4. Trees, vines, or shrubs; gynoecium and anthers usually decumbent but not nestled in the lowermost sepal; stigma terminal or subterminal; fruits variously vestitured, sometimes with black glandular punctate trichomes and occasionally with complex branching trichomes ..... *Caesalpinia s. l.*

*Hoffmannseggia* thus consists of small, non-spiny perennial herbs or subshrubs. Compared to other members of the *Caesalpinia* group (Polhill, 1994), the flowers are relatively regular and lack the cucullate sepal found in many species of *Caesalpinia*. While *Zuccagnia* and *Balsamocarpon*, both monotypic genera of southern South Amer-

were given for the North American species by Simpson (1999) in an earlier issue of this journal. Consequently we provide here representative specimens for only the South American taxa.

HOFFMANNSEGGIA Cav., Icon 4:63. tab. 392. 1798. Orth. cons. '*Hoffmanseggia*.' TYPE: *Hoffmannseggia falcaria* Cav., nom illeg. = *Hoffmannseggia glauca* (Ortega) Eifert.

*Hoffmannseggia* can be distinguished from *Zuccagnia* Cav. and *Balsamocarpon* Clos, its two sister genera, and from *Caesalpinia* and *Pomaria* Cav., with which it is most commonly confused, by the characters in the following key.

ica, form a clade sister to *Hoffmannseggia*, morphologically they are very distinct. *Zuccagnia* is a large shrub growing in the Monte Desert of Argentina that has bright, shiny leaves dotted with sunken resin-secreting glands and fruits that appear as small (5 mm without the setae), flattened "balls" covered with relatively stiff red-purple se-

tae. *Balsamocarpon* is a small shrub of the deserts of coastal Chile that has mature leaves borne on short shoots and cylindrical fruits ca. 5 cm long completely encased in resin when mature.

While not the closest relatives of *Hoffmannseggia*, some species of *Pomaria* and *Caesalpinia* are morphologically quite similar to *Hoffmannseggia* species and historically caused confusion about generic boundaries. In particular, a small suffrutescent habit led to the various erroneous placements of species of *Caesalpinia* and *Pomaria* in *Hoffmannseggia*. The most conspicuous difference between *Hoffmannseggia* and these latter two genera is the presence (by persistence) of sepals in fruit. Only *H. microphylla* and *H. peninsularis* occasionally lack some or all of the sepals on mature fruits but in these cases, there is a jagged tear rather than the smooth ring left on species of *Caesalpinia* or *Pomaria* after shedding of the sepals.

A phylogenetic analysis of *Hoffmannseggia* (Simpson et al., 2003) showed that there are two major clades in the genus (Fig. 1). All of the species in one of these clades are suffrutescent whereas those in the other are herbaceous. The suffrutescent clade has as defining characters its subshrubby habit, flowers born on branching stems, and fruits that dehisce by the simple opening and spreading of the valves with the valves sometimes twisting around themselves after dehiscing. Within this clade, species in the subclade of *H. pumilio*, *H. drummondii*, and *H. viscosa* share the trait of glandular trichomes on the margins of

the leaves. Its sister subclade of *H. intricata*, *H. microphylla*, and *H. peninsularis* has leaf margins that are glabrous or with only non-glandular trichomes.

In contrast most species of the herbaceous clade have essentially indehiscent fruits (*Hoffmannseggia oxycarpa*, *H. arequipensis*, and *H. miranda* being the exceptions). All members, except *Hoffmannseggia arequipensis* and *H. miranda*, have unbranched flowering stalks and all species except *H. eremophila* have flowering stalks that are longer than the leaves. Species of the subclade containing all the North American herbaceous species (*H. drepanocarpa* to *H. humilis* in Fig. 1) share the characters of glabrous petal margins and glabrous dorsal petal surfaces (i.e., lacking glandular trichomes). The South American clade of *Hoffmannseggia miranda* and *H. prostrata* have long multicellular trichomes on the claws of the petals. Finally, although in different clades, *H. erecta*, *H. eremophila*, *H. doellii*, *H. minor*, *H. trifoliata*, and *H. yaviensis* all have fruits that curve downward. In general, the North American herbaceous species are easier to distinguish morphologically (using trichome and fruit characters) from one another than the high Andean herbaceous species (*H. doellii*, *H. eremophila*, *H. minor*, *H. yaviensis*). However, in terms of molecular sequence data, several of the North American species are quite similar (Fig. 1), perhaps reflecting a recent radiation.

Assessing biogeography in light of the recent well-supported molecular phylogeny (Simpson et al., 2005) has shown that there have been four dispersals from South America to North America (Fig. 1).

ARTIFICIAL KEY TO THE SPECIES OF *HOFFMANNSEGGIA*

1. Plants subshrubby with woody branches, at least basally; flowers borne on leafy branches; fruits lunate, arcuate, or unequally obtrullate, dehiscent by simple spreading of the valves, valves occasionally in-rolling after dehiscence.
  2. Leaf margins with glandular trichomes.
    3. Plants upright with distinctive woody branches, never sticky; fruits crescent-shaped, wide in the middle and pointed on the ends.
      4. Branches gray (sometimes orange), robust; leaves (including petiole) less than 10 mm long (including the petiole); fruit valves with glandular trichomes . . . . . 16. *H. pumilio*
      4. Branches red or brown, thin; leaves (including petiole) 10–23 mm long; fruit valves glabrous . . . . . 4. *H. drummondii*

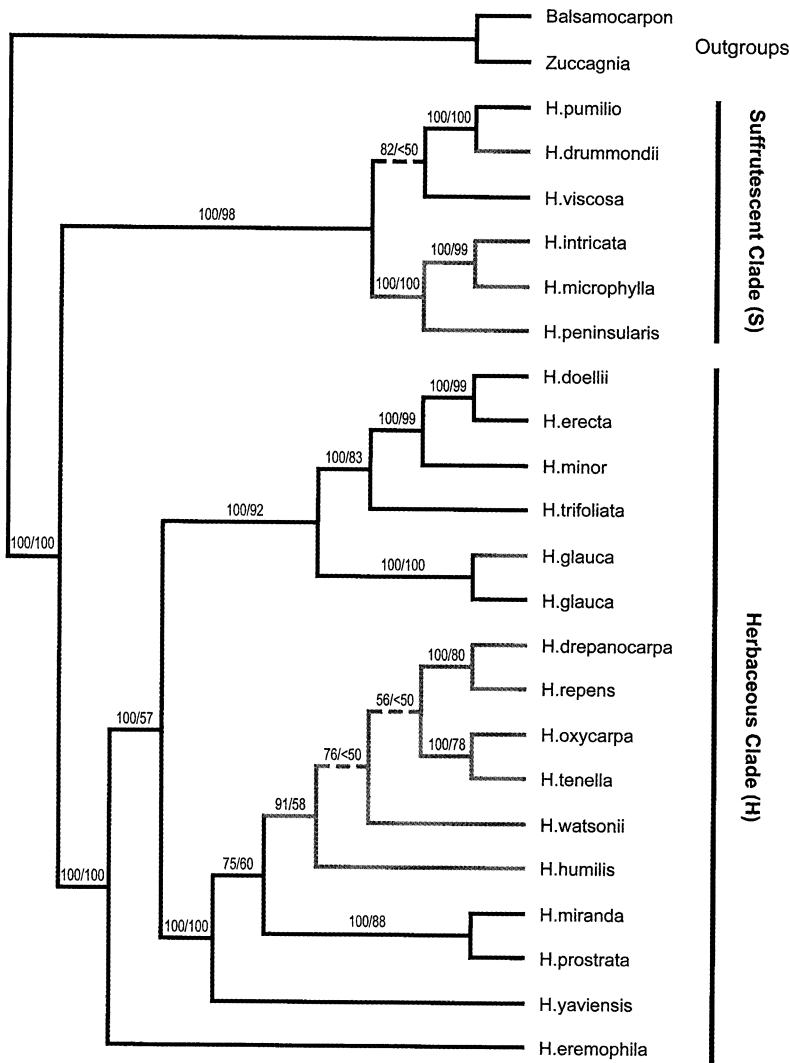


FIG. 1. Phylogenetic hypothesis of *Hoffmannseggia* resulting from a Bayesian analysis of combined molecular sequence data from the internal transcribed spacer regions of nuclear ribosomal DNA (ITS), the chloroplast *trnL* intron, *trnL-F* spacer region, and *rbcL* (Modified from Simpson et al., 2004). Taxa subtended by light lines are North American, those with black bars are South American showing that there have been four dispersals from South to North America. Note the natural occurrence of *H. glauca* on both continents. *Hoffmannseggia arequipensis*, not recognized in the study of Simpson et al (2004) would form a clade with *H. miranda*.

- 3. Plants spreading, often decumbent with branches woody at the base; stems and foliage often sticky; fruits with parallel margins and curved into an arc with a rounded tip ..... 20. *H. viscosa*
- 2. Leaf margins glandular.
- 5. Claws of petals with conspicuous long trichomes; flowers over 10 mm long; stipules fan-shaped with conspicuous stiff setae at the tips; fruit unequally obtrullate, dehiscent with the valves twisting ..... 12. *H. miranda*
- 5. Claws of petals glabrous; flowers less than 10 mm long; stipules linear-lanceolate to ovate and acute; fruits crescent-shaped or with parallel sides and arcuate, dehiscent with the valves simply spreading apart.

6. Plants highly branched, sometimes divaricately so; stems leafy; leaves with the terminal pinna shorter than, equal to, or only slightly longer than the lateral pinnae.
7. Plants nearly prostrate with branches almost zigzag but not spine-tipped; leaflets 3–6 pair; young stems and leaf rachises light red-brown; sepals always persistent in fruit; legume 15 mm long, 4–5 mm wide . . . . . 14. *H. peninsularis*
7. Plants erect, divaricately branching with very short internodes and often spinescent at the tips; young branches and leaf rachises often bluish or reddish; leaflets 8–10 pair; sepals often partially deciduous in fruit; legume 15–20 mm long, 6–7 mm wide . . . . . 9. *H. intricata*
6. Plants not highly branched and with branches sometimes appearing fasciculate; usually almost aphyllous; leaves with the terminal pinna noticeably longer than the lateral pinnae . . . . . 10. *H. microphylla*
1. Plants perennial herbs; flowers borne on unbranched flowering stalks arising from the base of the plant (but see *H. miranda*); fruits arcuate, orbicular, or unequally obtrullate in outline, indehiscent or dehiscent with each valve twisting around itself longitudinally.
  8. Flowers with conspicuous glandular trichomes greater than 0.5 mm in length on the claws of the petals; flag petal with conspicuous glandular trichomes on the dorsal surface.
  9. Stem bases woody with stems often branching basally; flowers yellow orange, with purple (occasionally yellow) filiform trichomes on the petal claws 0.5–3.0 mm long; fruits elongate, obtrullate in outline, dehiscent with the valves twisting; valves glabrous to tomentose
  10. Leaflets subelliptical, obovate, or subfalcate in outline, without conspicuous veins, soft, (4)6–9(10) pair per pinna . . . . . 1. *H. arequipensis*
  10. Leaflets ovate, obovate, or elliptical in outline, prominently veined, coriaceous, 3–5(9) pair per pinna . . . . . 12. *H. miranda*
  9. Plants completely herbaceous; flowers bright yellow, with yellow (occasionally red in *H. prostrata*), glandular clavate trichomes on the petal claws less than 0.5 mm long; fruits with parallel margins, straight or arcuate, more or less glabrous, lightly pubescent, or puberulent, or unequally obtrullate and densely covered with long capitate trichomes.
  11. Pedicels and sepals with conspicuous, stalked glandular trichomes.
    12. Fruits with parallel margins, arcuate, indehiscent; valves lightly tomentose with a few scattered glandular trichomes; tip of fruit rounded; roots forming tuber-like masses . . . . . 7. *H. glauca*
    12. Fruits with margins not parallel and unequally obtrullate in outline, dehiscent with the valves twisting around themselves after dehiscence; valves densely covered with black-tipped glandular trichomes; tip of fruit acute; roots not forming tuber-like swellings . . . . . 13 b. *H. oxycarpa* subsp. *arida*
  11. Pedicels and sepals tomentose with no or very few scattered glandular trichomes.
  13. Fruits curled into an S-shape or complete circle; valves glabrous; flowers nodding after blooming. [Note: the two following species hybridize and intermediate specimens occur.]
    14. Leaves with 2–6 pairs of pinnae; leaflet apex rounded or slightly acute . . . . . 5. *H. erecta*
    14. Leaves trifoliolate; leaflet apex acute to mucronate . . . . . 19. *H. trifoliata*
  13. Fruits straight; valves strigose to lanose; flowers remaining upright after blooming . . . . . 15. *H. prostrata*
8. Flowers without glandular trichomes (or only a few) on the petal claws; flag petal with or without glandular trichomes on the dorsal surface.
15. Flowers without glandular trichomes on the dorsal surface of the flag petal; roots never forming tuber-like growths; fruits straight and borne upright (except *H. oxycarpa* subsp. *oxycarpa*), or arcuate and curled upward, or almost orbicular, always with the placental margin uppermost.
16. Flowers 6–10 mm long; fruits with parallel margins and either straight or curved into a pronounced arc.
  17. Fruits straight, 8–19 mm long, beige with red edges; seeds 2–4 per fruit . . . . . 18. *H. tenella*
  17. Fruits curled into a pronounced arc, 23–40 mm long (total length), brown or red; seeds 6–11 per fruit . . . . . 3. *H. drepanocarpa*
16. Flowers 7–20 mm long; fruits obtrullate, rectangular, oblong, or almost orbicular in outline.
18. Sepals and pedicels with conspicuous multicellular glandular trichomes.
  19. Fruits rectangular in outline, reticulately veined, indehiscent; leaflets usually strigose or villous . . . . . 8. *H. humilis*
  19. Fruits unequally obtrullate, obscurely veined, dehiscent with the valves twisting after dehiscence; leaflets usually glabrous . . . . . 13 a. *H. oxycarpa* subsp. *oxycarpa*

- 18. Sepals and pedicels pubescent, strigose, or tomentose, but lacking glandular trichomes.
  - 20. Free portion of sepals 7–11 mm long; fruits broad, sometimes almost orbicular in outline, 10–20 mm wide . . . . . 16. *H. repens*
  - 20. Free portion of the sepal 3–5 mm long; fruits oblong in outline, less than 10 mm wide . . . . . 20. *H. watsonii*
- 15. Flowers with glandular trichomes on the dorsal side of the flag petal; roots often forming tuber-like growths; fruits straight or curled (sometimes into a complete circle or into an “S” shape) and curved downward with the placental margin facing downward.
  - 21. Fruit straight or only slightly recurved, usually shorter than 3.5 cm; inflorescences with fewer than 8 flowers per inflorescence.
  - 22. Plants lacking glandular trichomes on the sepals, pedicels, and fruit valves, occasionally present on the edges of the stipules; leaflets uniformly green.
    - 23. Leaflet surfaces, primarily the dorsal, with sparse strigose trichomes; leaflet margins usually with a conspicuous dense row of very short, white, straight, setose trichomes; sepals with strigose trichomes; all petals with dense, often contrastingly colored glandular trichomes on the dorsal surfaces; fruits red; valves more or less glabrous; fruit margins glabrous . . . . . 11. *H. minor*
    - 23. Leaflet surfaces (primarily the dorsal) with small, scattered curled trichomes; leaflet margins with a few small, curled trichomes; sepals with short curled trichomes; non-flag petals with fewer yellow glandular trichomes on the dorsal surfaces or claws than the flag petal; fruits brown or red; valves and margins with short, curled trichomes . . . . . 22. *H. yaviensis*
  - 22. Plants with conspicuous black-tipped glandular trichomes on the sepals, pedicels, and fruit valves; leaflets with red margins . . . . . 6. *H. eremophila*
- 21. Fruit recurved into a S-shape or a semi-circle, usually longer than 3.5 cm; inflorescences usually with more than 8 flowers per inflorescence.
  - 24. Flowering stalks and pedicels villous with red-tipped or dark red glandular stalked trichomes; flowers red-tipped in bud; glandular trichomes on the dorsal petal surfaces obvious; fruit over 5 mm wide, usually curling into a semi-circle; valves of fruit pilose and glandular . . . . . 2. *H. doellii*
  - 24. Flowering stalks and pedicels more or less glabrous, without glandular trichomes; flowers yellow in bud; glandular trichomes comparatively obscure on dorsal surfaces of the petals; fruits usually less than 5 mm wide, often twisting into a S-shape; valves of fruit usually glabrous. [Note: the two following species hybridize and intermediate specimens can be found.]
    - 25. Leaves with 2–6 pairs of pinnae; leaflet apex rounded or slightly acute 5. *H. erecta*
    - 25. Leaves trifoliolate; leaflet apex acute to mucronate. . . . . 19. *H. trifoliata*

SYNOPSIS OF THE SPECIES

There have been various spellings of *Hoffmannseggia* and many species were described as “*Hoffmanseggia*” or even “*Hoffmannseggia*.” The correct spelling by orthographic conservation is with “nn” and “gg” (as in the name of John C. Hoffmannsegg for whom the genus was named). Consequently, in the following nomenclature, we have used *Hoffmannseggia* regardless of the original spelling of the author.

Note that representative specimens are given only for the South American species. Extensive lists of specimens examined for the North American taxa and maps of all of their distributions were given in an earlier issue of this journal (Simpson, 1999).

1. **HOFFMANNSEGGIA AREQUIPENSIS** Ulibarri, Darwiniana 28: 232, f. 1. 1987. TYPE: PERU. **AREQUIPA**. **Caraveli**: Lomas de Atico, between Chala and Camaná, 28 Nov 1955, 100–200 m, *R. Ferreyra 11546* (HOLOTYPE: SI!; ISOTYPES: USM, LL!).

**DISTRIBUTION AND HABITAT**: Restricted to various lomas on the west coast of southern Peru.

**CHROMOSOME NUMBER**: unknown.

**ICONOGRAPHY**: Ulibarri 1987, Fig. 1 a–f.

**REPRESENTATIVE SPECIMENS EXAMINED**: PERU. **Arequipa**. Lomas de Atiquipa, 16-XI-1983 (fl, fr), *E. Carrillo 1213* (SI); Chala-Camaná, 8-XI-1947 (fl, fr), *R. Ferreyra 2528* (SI, USM); Lomas de Chapparra, cerca de Chala, 14-X- (fl), *R. Ferreyra 11986*

(SI); Chala-Yanca, 18-III-1953 (fl), *Petersen & Hjeriting* 11939 (LIL, SI); Lower slopes of Misti, II-1943 (fl), *Sanderman* 3820 (K); Atico, 16-II-1957 (fl, fr), *O. Tovar* 2672 (SI, USM).

This taxon has several morphological features that distinguish it from *Hoffmannseggia miranda*, notably, stipules with small teeth, comparatively small non-coriaceous leaves with prominent veins, and the color of the long trichomes on the claw that are purple in *H. miranda* and yellow in *H. arequipensis*. While we recognize this taxon here, it should be noted that molecular data of Simpson et al., 2004 (see their Fig. 2) clearly placed both specimens sampled within *H. miranda*. In that work (summarized here in Fig. 1) it was treated as conspecific with *H. miranda*.

2. *HOFFMANNSEGGIA DOELLII* Phil., *Anales Univ. Chile* 41: 710. 1872. TYPE: CHILE. Salitreras de Antofagasta, en el desierto de Atacama, 1872, *G. Döll s.n.* (LECTOTYPE: SGO 49951 p.p.! designated by Ulibarri, 1996).

DISTRIBUTION AND HABITAT: Chile at high elevations (2300–3500 m) in Tarapacá and Antofagasta.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ulibarri, 1979, Fig. 5 a–g; Ulibarri, 1996, Fig. 8 F; Figs. 2A, 3A this article.

REPRESENTATIVE SPECIMENS EXAMINED: CHILE. II Región. Antofagasta. Aiquina-Toconce, 19-XI-1967 (fl, fr), *H. Martín* 386 (LIL, SI); S. Pedro-Calama, 16-XII-1989 (fl, fr), *Wickens* 42/89 (K). El Loa. 10 km E. of Conchi, 10-II-2000 (fl, fr), *B. B. Simpson* 10-II-001 (TEX, SI); 3 km NW of Toconao, 12-II-2000 (fl), *B. B. Simpson* 12-II-00-1 (TEX, SI); 7 km of Socaire, 12-II-2000 (fl, fr), *B. B. Simpson* 12-II-00-2 (TEX, SI).

*Hoffmannseggia doellii* is an attractive species with its rosette of leaves from which multi-flowered inflorescences arise. The tips of the unopened flowers extending beyond the sepals are bright red. Freshly opened flowers are yellow with some red markings and older flowers fade to red. This species

is often confused with *H. eremophila*, but that species has a shorter, less curved fruit, fewer than eight flowers per inflorescence and, usually, red-margined leaves. *Hoffmannseggia doellii* has long fruits that curve, sometimes almost into a circle, more than eight flowers per inflorescence, and uniformly green leaves.

In 1979, one of us (E.A.U.) described *Hoffmannseggia doellii* Phil. subsp. *argentina* Ulibarri from northwestern Argentina (Catamarca, La Rioja, and San Juan).

*Hoffmannseggia doellii* Phil. subsp. *argentina* Ulibarri [*Darwiniana* 22: 155, fig. 5a–e. 1979. TYPE: ARGENTINA. SAN JUAN. Dpto. Inglesia: Cuesta de los Heladeros, 5 Feb 1962, *A. Ruiz Leal* 22091 (HOLOTYPE: SI!].

SPECIMENS ASSIGNED TO THIS TAXON: ARGENTINA. Catamarca. Dpto. Santa María: Campo Arenal, 4-III-1971 (fl), *A. Cabrera & al.* 21816 (LP). La Rioja. Dpto. Sarmiento: Punta de Agua, 24-I-1949 (fl), *A. Krapovickas & O. Caso* 5495 (BAB, CORD). San Juan. Dpto. Iglesia: camino al El Fierro, 21-I-1974 (fl), *A. Cabrera & al.* 24486 (LP); Dpto. Calingasta: Qda. de Hilario, XI-1967 (fl), *Herbst* 1089 (SI). Mendoza. Dpto. Las Heras: Paramillo de Uspallata, 12-I-1964 (fl), *A. Ruiz Leal* 23098 (SI).

We are currently unsure how to treat this taxon until there is more material to be examined both morphologically and using molecular tools. Specimens assigned to this taxon (listed above) are conspicuously pilose and glandular. It is possible that this entity is actually closer to *H. eremophila* than to *H. doellii*, or a hybrid involving one or both of these species, or possibly a distinct species.

3. *HOFFMANNSEGGIA DREPANOCARPA* A. Gray, *Pl. wright.* 1: 58 [*Smithsonian Contr. Knowl.* 3(5): 58]. 1852. TYPE: UNITED STATES. TEXAS. [Between Texas and El Paso], “Wright coll. Tex. N. Mex,” *C. Wright* (Gray number 1027) (LECTOTYPE: GH! designated in Simpson, 1999; POSSIBLE ISOLECTOTYPES: K!, GH!, MO!, NY!, US!).

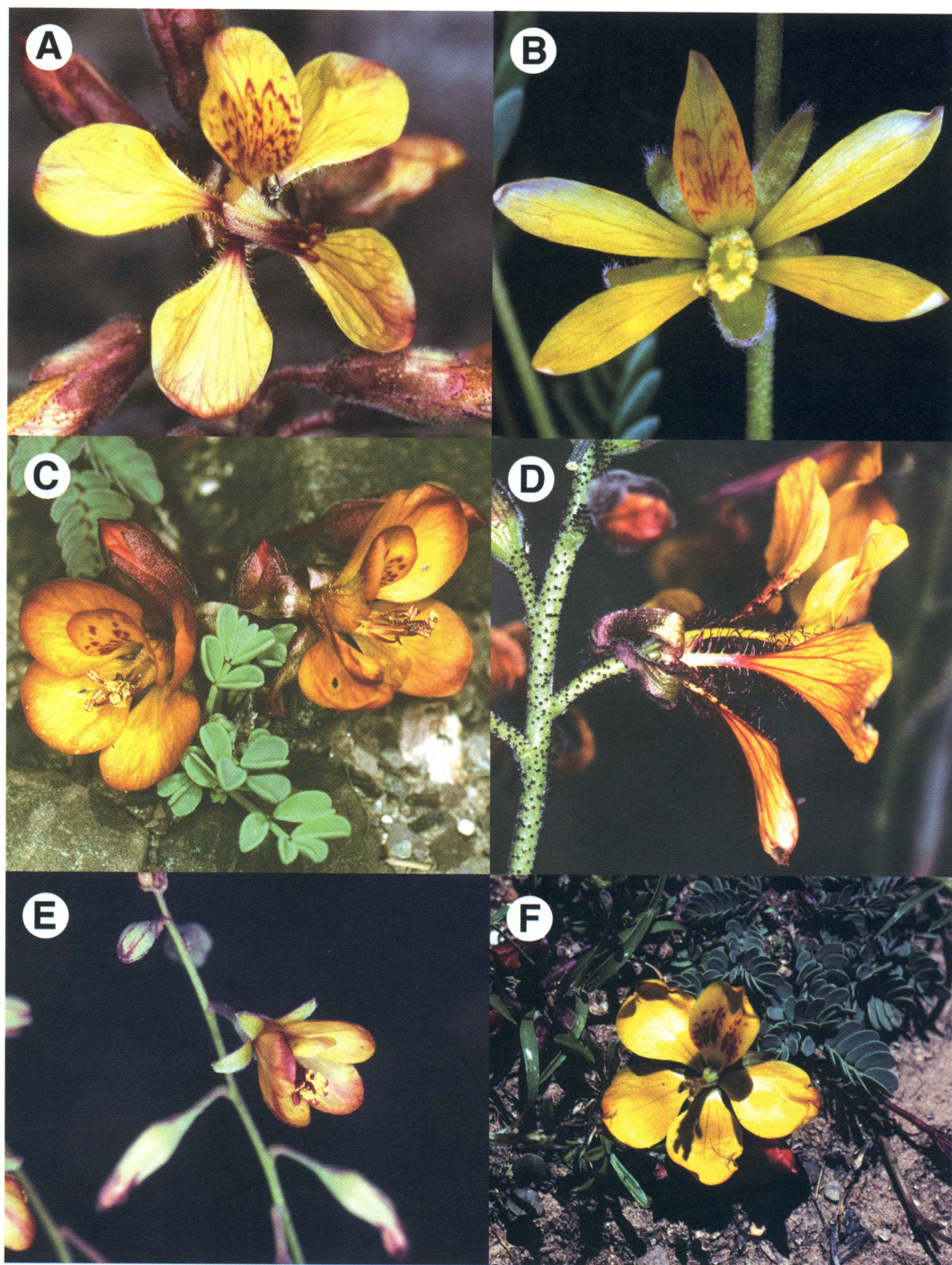


FIG. 2. Flowers of *Hoffmannseggia* species. A. *H. doellii* showing the small yellow glandular trichomes on the claws of the petals.  $\times 4.5$ . B. *H. drepanocarpa* from west-central Texas with a very simple flower.  $\times 13$ . C. *H. minor*, a ground-hugging high Andean species.  $\times 3$ . D. *H. miranda* from the coast of Peru showing the extremely long dark-colored trichomes on the petal claws.  $\times 3$ . E. *H. viscosa* from western Peru has very variably sized flowers.  $\times 4$ . F. *H. yaviensis* from northern Argentina.  $\times 1.9$ . Photos by J. L. Neff.



The problems of associating Wright's collection numbers with the numbers assigned to them by Asa Gray are discussed in Simpson (1999).

*Caesalpinia drepanocarpa* (A. Gray) Fisher, Bot. Gaz. 18: 122. 1893.

*Larrea drepanocarpa* (A. Gray) Britton, N. Amer. fl. 23 (5): 312. 1930.

**DISTRIBUTION AND HABITAT:** Widely distributed in the grasslands of southwestern United States (Kansas and Colorado south to California and Texas) and in Mexico in the state of Chihuahua at 900–1200 m elevation (Isely, 1975, Map 74; Simpson, 1999, Fig. 2).

**CHROMOSOME NUMBER:**  $2n = 24$  (Turner and Fearing, 1960).

**ICONOGRAPHY:** Fig. 2B this article.

While this species has the broadest distribution of any North American species except for *Hoffmannseggia glauca*, it is not weedy and does not occur in large stands. The most characteristic feature of the species is the fruit that is flattened, has parallel edges, and is curled into a semi-circle or an almost complete circle. The valves are shiny red-brown or brown.

4. *HOFFMANNSEGGIA DRUMMONDII* Torr. & A. Gray, Fl. N. Amer. 1 (3): 393. 1840. TYPE: UNITED STATES. TEXAS. [1834], *T. Drummond s.n.* (HOLOTYPE: NY!; ISOTYPES: GH!, US!).

*Caesalpinia drummondii* (Torr. & A. Gray) Fisher, Bot. Gaz. 18: 123. 1893.

*Larrea drummondii* (Torr. & A. Gray) Britton, N. Amer. fl. 23(5): 311. 1930.

*Hoffmannseggia texensis* Fisher, Contr. U.S. Natl. Herb. 1: 147. 1892. TYPE: UNITED STATES. TEXAS. [Probably **McMullen Co.**]: Nueces River, [24 Jul] 1828, *J. L. Berlandier 612* (HOLOTYPE: GH!).

*Caesalpinia texensis* (Fisher) Fisher, Bot. Gaz. 18: 123. 1893.

*Larrea texensis* (Fisher) Britton, N. Amer. fl. 23(5): 311. 1930.

**DISTRIBUTION AND HABITAT:** Confined to southern Texas, USA, and in eastern Tamaulipas, Mexico, growing at elevations below 700 m (Isely, 1975, Map 8; Simpson, 1999, Fig. 3).

**CHROMOSOME NUMBER:** Unknown.

**ICONOGRAPHY:** Simpson, 1999, Plate 1C.

*Hoffmannseggia drummondii* appears to be rare in the United States, possibly because of the destruction of habitat in the southern part of Texas. In its woody habit and fruit morphology it is similar to *H. pumilio* of South America and molecular data have shown them to be sister taxa. The two differ, however, in robustness and habitat. Individuals of *Hoffmannseggia drummondii* are small, open shrubs with flexible branches. Populations occur at sea level in sandy clay soils of southern Texas and northern Mexico, whereas shrubs of *H. pumilio* are stout and stiff and grow in rocky soils at elevations between 1,800 and 4,000 m in the Andes of northern Argentina and southern Bolivia.

5. *HOFFMANNSEGGIA ERECTA* Phil., Anales Mus. Nac., Santiago de Chile 84: 437. 1893. TYPE: ARGENTINA. MENDOZA. Jan–Feb 1885, *L. Golsack s.n.* (HOLOTYPE: SGO 49954!; fragment and photo SI!).

*Hoffmannseggia falcaria* Cav. var. *andicola* Hook. & Arn., Bot. Misc. 3: 209. 1833. TYPE: ARGENTINA. MENDOZA. Near Villavicencio at the foot of the mountains near Mendoza, *Dr. Gillies s.n.* (HOLOTYPE: K!; fragment SI!).

*Hoffmannseggia patagonica* Speg., Anales Soc. Ci. Argent. 47: 283. 1899. TYPE: ARGENTINA. CHUBUT. Trelew, Nov 1897, *J. Valentin s.n.* (HOLOTYPE: LPS 11933 in LP!).

*Hoffmannseggia nana* Chodat & Wilczek,



FIG. 3. Variation in fruits of *Hoffmannseggia* species. A. *H. doellii* from northern Argentina has dark-colored slightly recurved fruits.  $\times 2$ . B. Fruits of *H. miranda* are dehiscent with the valves twisting after the seeds have been shed.  $\times 2$ . C. *H. peninsularis* from Baja California has fruits similar to those of *H. viscosa* (Fig. 3F).  $\times 2$ . D. *H. repens* restricted to the deserts of eastern Utah and neighboring Colorado, USA, has broad, flat, undulating fruits.  $\times 0.67$ . E. *H. tenella*, an endangered species from southern Texas, USA, has simple indehiscent fruits.  $\times 3.5$ . F. *H. viscosa* has lunate fruits.  $\times 1.4$ . Photos by J. L. Neff.

Bull. Herb. Boiss. Sér. 2. 2: 476. 1902.  
TYPE: not seen, presumably at G-Boiss.

Based on the description of this species by Chodat and Wilczek and the fact that it was collected in the Atuel River valley we conclude that it is the same species as *H. erecta*.

DISTRIBUTION AND HABITAT: West-central Argentina at elevations from 140–3200 m in the Provinces of Catamarca, La Rioja, San Juan, Mendoza, and Chubut.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ulibarri, 1979, Fig. 6 a–c; Ulibarri, 1996, Fig. 8A; cover photo, this volume.

REPRESENTATIVE SPECIMENS EXAMINED: ARGENTINA. **Catamarca.** Dpto. Tinogasta: Pastos Largos, 20-III-1951 (fl), *F. Vervoort* 3172 (LIL, SI). **La Rioja.** Dpto. Chilecito: Cuesta de Miranda, 12-I-1976 (fr), *A. Cabrera & al.* 27928 (SI). **San Juan.** Dpto. Zonda: camino a Maradona, 4-XI-1975 (fl), *R. Kiesling* 1056 (SI). **Mendoza.** Dpto. Las Heras, Mendoza-Uspallata, 18-I-2000 (fl), *B. B. Simpson* 18-I-002 (TEX, SI). **La Pampa.** Dpto. Loventué, ruta 147, 26-XII-1963 (fr), *A. Cano* 2930 (BAB, SI). **Chubut.** Dpto. Biedma: camino a Península Valdés, 26-XI-1967, *M. Correa* 3923 (BAB, SI).

Molecular work has confirmed the previous suggestion of one of us (E.A.U. 1996) that hybridization occurs between this species and *Hoffmannseggia trifoliata*. We found the two species growing sympatrically in Mendoza in January 2000 and molecular studies using a combination of nuclear and chloroplast markers showed that morphologically intermediate plants were indeed hybrids (Simpson et al., 2004). *Hoffmannseggia erecta* can usually be recognized by its long, thin fruits (less than 5 mm wide and over 15 mm long) that curl into a circle or an S-shaped form when mature.

6. *HOFFMANNSEGGIA EREMOPHILA* (Phil.) Burkart ex Ulibarri, Darwiniana 22: 145, Fig. 7 d-i. 1979.

*Zuccagnia eremophila* Phil., Fl. atacam. p.

17, no. 91, tab. I B. 1860. TYPE: CHILE. [**Antofagasta.** Atacama Desert] Aguada del Profeta, Jan 1854 (HOLOTYPE: SGO 49966!; fragment and photo SI!).

*Hoffmannseggia andina* Miers, Travels in Chile and La Plata II: 532. 1826. An invalid name because it is a *nomen nudum*. *Hoffmannseggia andina* (Phil.) Phil., Anales Mus. Nac., Santiago de Chile sec. 2: Bot. p. 19. 1891. Anales Univ. Chile 2: 170. 1870. TYPE: CHILE. **Tarapacá.** Quebrada de Paipote, *F. Philippi* 1870 (HOLOTYPE: SGO 39946!; photo SI!).

Philippi's name *Hoffmannseggia andina* needs some explanation because of apparent incorrect citations. In 1870, Philippi (An. Univ. Chile 36: 170) provided a catalog of plants collected in Mendoza by Pablo Ortega and Edwyn Reed. Number 55 b in this catalog was given the name *Hoffmannseggia falcaria* var. *andina* Hook. & Arn. Hooker and Arnott never described a variety of *H. falcaria* named "andina," but they did describe a var. *andicola* (see *H. erecta* above). In the 1891 publication enumerating plants he collected in Tarapacá, Chile, Philippi described *Hoffmannseggia andina* citing a Paipote specimen. He also cited within the protologue, *Hoffmannseggia falcaria* var. *andina* Phil. giving as its publication, An. Univ. Chile 1870, p. 170 (i.e., the same place where the supposed *H. f.* var. *andina* Hook. & Arn. is mentioned). It is not clear why Philippi at this point attributed the variety to himself. Ulibarri (1979) considered *H. f.* var. *andina* Phil. a *nomen nudum* but we could also consider that Philippi's name was an orthographic variant of Hooker and Arnott's name. We do not assume that this reference indicates that Philippi's *H. andina* is based on the same type as *H. falcaria* var. *andicola*. In any case, the 1891 entity is from northern Chile and belongs within *H. eremophila*. The Mendoza specimen from the Ortega and Reed collections would presumably be *H. erecta*.

*Hoffmannseggia andina* Miers. var. *eremo-*

*phila* (Phil.) Reiche. *Anales Univ. Chile* 97: 309. 1897 and *Fl. Chile* 2: 46. 1897. An invalid combination because the name of a taxon below the rank of genus is invalid if the name to which it is assigned is not validly published. *H. andina* Miers is a *nomen nudum* and hence not validly published.

*Hoffmannseggia philippiana* Hosseus, *Bol. Acad. Nac. Ci. Republ. Argent.* 26: 140. 1921. A substitute name Hosseus provided for *H. andina* Phil. because he thought the epithet 'andina' was preoccupied by *H. andina* Miers [actually a *nomen nudum*].

**DISTRIBUTION AND HABITAT:** Collected from northern Chile and northwestern Argentina in dry, rocky soils at elevations from 3000–4000 m.

**CHROMOSOME NUMBER:**  $2n = 24$  (as *H. andina*) (Covas and Schnack, 1946).

**ICONOGRAPHY:** Ulibarri, 1979, Fig. 7 d-f; Ulibarri, 1996, Fig. 8B, C; Simpson et al. 2004, Fig. 5A.

**REPRESENTATIVE SPECIMENS EXAMINED:**

**CHILE. II Región.** Antofagasta: N Quebrada Chaco, XII-1996 (fl), *G. Arancio* & *F. Squeo* 10334 (CONC). **III Región.** Atacama. Taltal. Cord. Volcán LLullaico, II-1925 (est.), *E. Werdermann* 1044 (K, LIL, SI). **ARGENTINA. Salta.** Dpto. Los Andes: Abra Navarro, 16-II-1980 (fr), *A. Cabrera* & al. 31804 (SI). **Catamarca.** Dpto. Antofagasta de la Sierra: N de Cazadero, 28-I-1930 (fr), *A. Castellanos* (BA 30/505); Dpto. Tinogasta: Fiambalá-S. Francisco, 156 km W of Fiambalá, 31-I-2006 (fr), *B. B. Simpson* 31-I-06-4 (TEX, SI).

This species usually consists of small rosette perennial herbs that are easily confused with *Hoffmannseggia yaviensis* and *H. minor*. Based on molecular work, *H. eremophila* is not closely related to either. In fact, it is the sister to the rest of the herbaceous clade (Fig. 1). Roots of this species form tuber-like swellings that are characteristic of the South American high-elevation herbaceous clade and it bears its fruits curving downward. It can most easily be distinguished from the other high elevation

South America species by the presence of black-tipped glandular trichomes often mixed with villous non-glandular trichomes on the sepals and petals. It differs from *H. doellii* in having a less curved fruit and leaflets that are usually red-edged and bearing glandular trichomes.

7. *HOFFMANNSEGGIA GLAUCA* (Ortega) Eifert, *Sida* 5: 43. 1972.

*Larrea glauca* Ortega, *Nov. pl. desc.* dec. 15. tab. 2. 1797. TYPE: Listed as originally collected by Née from Peru but described from a specimen growing at the Madrid Botanical Garden. (HOLOTYPE: MA; photo at TEX! However the photo says collected by Ruiz and Pavón in Chile). A rejected name because of conservation of *Larrea* Cav. a genus of Zygophyllaceae.

*Caesalpinia glauca* (Ortega) Kuntze, *Rev. gen. pl.* 3 (2): 52. 1898.

*Hoffmannseggia falcaria* Cav., *Icon.* 4: 63, tab. 392. 1798. An illegitimate name since it was a substitute name (by citation) for *Larrea glauca* Ortega.

*Caesalpinia falcaria* (Cav.) Fisher, *Bot. Gaz.* 18: 122. 1893.

*Hoffmannseggia stricta* Benth in A. Gray, *Pl. wright.* 1: 56. 1852 [*Smithsonian Contr. Knowl.* 3(5): 56]. TYPE: MEXICO. ZACATECAS. *T. Coulter* 488 (LECTOTYPE: GH! designated by Fisher 1892; ISOLECTOTYPES: K!, NY!).

*Hoffmannseggia falcaria* var. *stricta* (Benth. in A. Gray) Fisher, *Contr. U.S. Natl. Herb.* 1: 144. 1892.

*Caesalpinia falcaria* (Cav.) Fisher var. *stricta* (Benth. in A. Gray) Fisher, *Bot. Gaz.* 18: 122. 1893.

*Hoffmannseggia stricta* Benth. var. *demissa* A. Gray, *Pl. wright.* 1: 56. [*Smithsonian Contr. Knowl.* 3(5): 56]. 1852 TYPE: MEXICO. From a dried-up bed of Lake W of Parras, 13 Apr 1847, *Greg* 268 (HOLOTYPE: GH! ISOTYPES: MO!, NY!). See discussion in Simpson (1999).

*Hoffmannseggia falcaria* Cav. var. *demissa*

- (A. Gray) Fisher, Contr. U.S. Natl. Herb. 1: 145. 1892.
- Hoffmannseggia densiflora* Benth. in A. Gray, Pl. wright. 1: 55 [Smithsonian Contr. Knowl. 3(5): 55]. 1852. TYPE: UNITED STATES. Valley of the Pecos, Aug, C. Wright 148 (LECTOTYPE: GH! designated by Fisher 1892; ISOLECTOTYPES: K!, NY!). See discussion in Simpson (1999).
- Caesalpinia falcaria* (Cav.) Fisher var. *densiflora* (Benth.) Fisher, Bot. Gaz. 18: 122. 1893.
- Larrea densiflora* (Benth.) Britton, N. Amer. fl. 23 (5): 311.1930.
- Hoffmannseggia falcaria* Cav. var. *capitata* Fisher, Contr. U.S. Natl. Herb. 1: 145. 1892. TYPE: UNITED STATES. ARIZONA. [Pima Co.]: Santa Cruz Valley near Tucson, 11 May 1881, Pringle s.n. pro parte (HOLOTYPE: GH!; ISOTYPES: F!, NY!). This type and that of *Hoffmannseggia falcaria* var. *pringlei* (see below) are mounted on the same sheet at GH.
- Caesalpinia falcaria* (Cav.) Fisher var. *capitata* (Fisher) Fisher, Bot. Gaz. 18:122. 1893.
- Hoffmannseggia falcaria* Cav. var. *pringlei* Fisher, Contr. U.S. Natl. Herb. 1: 145. 1892. TYPE: UNITED STATES. ARIZONA. [Pima Co.]: Santa Cruz Valley near Tucson, 29 Jun 1881. Pringle s.n. pro parte (HOLOTYPE: GH!; ISOTYPES: MO!, NY!).
- Caesalpinia falcaria* (Cav.) Fisher var. *pringlei* (Fisher) Fisher, Bot. Gaz. 18: 122. 1893.
- Hoffmannseggia falcaria* Cav. var. *rusbyi* Fisher, Contr. U.S. Natl. Herb. 1: 145. 1892. TYPE: UNITED STATES. NEW MEXICO. [presumably Grant Co.]: "Ungus" [fide the protologue, Mangus (= Mangas Springs) on the sheet], May 1881, H. H. Rusby 111 (HOLOTYPE: NY!; ISOTYPES: F!, MO!, US!).
- Caesalpinia falcaria* (Cav.) Fisher var. *rusbyi* (Fisher) Fisher, Bot. Gaz. 18: 122. 1893.
- Caesalpinia chicamana* Killip & J. F. Macbr., Publ. Field Mus. Nat. Hist. (Fl. Peru), Bot. Ser. 13 (3): 191. 1943. TYPE: PERU. LA LIBERTAD. Chicama Valley, Smyth 74 (HOLOTYPE: US, fide Eifert 1972; photo SI!).
- Hoffmannseggia chicamana* (Killip & J. F. Macbr.) Eifert, Sida 5: 43. 1972.

DISTRIBUTION AND HABITAT: In weedy and ruderal localities broadly across the United States from Kansas and Colorado south to southwestern Texas and west to California and in Mexico in Baja California and north-central Mexico south to Puebla [Isely, 1975, Map 74; Simpson, 1999, Fig. 5]. In South America, the species occurs from southern Peru across Bolivia into northern Chile and in Argentina as far south as Patagonia. It has been recorded at elevations from sea level to 3400 m.

CHROMOSOME NUMBER:  $2n = 24$  (Covas and Schnack, 1946; Turner, 1956)

ICONOGRAPHY: Ulibarri, 1979, Figs. 1–4; Ulibarri, 1996, Fig. 6; Hickman, 1993 p. 615; Fig. 6; Simpson, 1999, Plate 1A; Lewis, 2005, p. 145.

REPRESENTATIVE SPECIMENS FROM SOUTH AMERICA EXAMINED: PERU. La Libertad. Trujillo, campos salitrosos Hda. La Encalada, 4-I-1948 (fl), Angulo 201 (SI). BOLIVIA. Potosí. Suichichas, Arenales, 5-II-1948 (fl), Pierotti 7018 (LIL). CHILE. III Región. Atacama, Copiapó, 30-I-1950 (fl, fr), Jiles 1665 (SI); Vallenar, XI-1923 (fl), E. Werdermann 146 (LIL, SI); Desertum Atacama (fl), 3.500 m, Philippis s. n. (CORD). ARGENTINA. Jujuy. Dpto. Tumbaya: Purmamarca, 23-II-1901 (fl), Claren s. n. [Herb. Kurtz 11746] (CORD). Catamarca. Dpto. Antofagasta de la Sierra. Antofagasta de la Sierra, 17-II-1974 (fl, fr), E. Ulibarri et al. 639 (K, SI). Mendoza. Dpto. Malargüe: alrededores de Malargüe, 20-I-1982 (fl, fr), A. Cabrera et al. 33460 (SI). Buenos Aires. Bahía Blanca, cerca de Laguna La Salada, 13-IV-1943 (fl), Bartlett 19907 (SI). Neuquén. Dpto. Confluencia: 8 km E of Plaza Huinca, 21-I-2000 (fl, fr), B. B. Simpson 21-I-00-2 (TEX. SI). Chubut. Dpto. Biedma: Punta Norte, 24-X-1969 (fl), Daciuk s. n. CNP(LVS) 92 (SI).

This species is amphitropically distributed in North and South America and covers huge expanses of terrain on both continents. It was recently reported adventive

in arid, disturbed areas of the province of Alicante in southeastern Spain (Camuñas and Crespo, 1999). It is a weedy and aggressive species spreading by root-borne shoots. Its variability and distribution are reflected in the numerous described entities given in the synonymy, none of which is recognized here. Many of these entities are undoubtedly only clones from various localities. It is the only species in North America with roots that form tuber-like growths, reflecting its South American origin and relationship with the clade of South American species, many of which have the same "root tuber" forming character. Despite its ready growth on disturbed sites and its being labeled a weed of agricultural pastures in southwestern North America, the bright yellow flowering stalks can be rather pretty as they line highway median strips and roadsides. The species can be distinguished from all other North American species because of the conspicuous glandular trichomes on the claws of the petals.

8. *HOFFMANNSEGGIA HUMILIS* (Mart. & Galeotti) Hemsl., *Biol. cent-amer., Bot.* 1: 326. 1880.

*Pomaria humilis* Mart. & Galeotti, *Bull. Acad. Roy. Sci. Bruxelles* 10 (Ser. 1) Par. 2: 303. 1843. Type: [MEXICO. PUEBLA.] Calcareous mountains N of Tehuacán, 2000 m, Aug, *H. G. Galeotti* 3228 (HOLOTYPE: BR!; photo 32066 at TEX! and SI!; ISOTYPE: K!, W!).

*Larrea humilis* (Mart. & Galeotti) Britton, *N. Amer. fl.* 23(5): 316. 1930.

*Hoffmannseggia gladiata* Benth. in A. Gray, *Pl. wright.* 1: 57 [Smithsonian Contr. Knowl. 3(5): 57]. 1852. TYPE: MEXICO. [HIDALGO]. Zimapán, *T. Coulter* 487 (HOLOTYPE: K!; ISOTYPE: TCD!).

*Caesalpinia gladiata* (Benth.) Fisher, *Bot. Gaz.* 18: 122. 1893.

*Larrea gladiata* (Benth.) Britton, *N. Amer. fl.* 23(5): 314. 1930.

*Hoffmannseggia platycarpa* Benth. in A. Gray, *Pl. wright.* 1: 57 [Smithsonian

Contr. Knowl. 3(5): 57]. 1852. TYPE: MEXICO. *T. Coulter* 486 (HOLOTYPE: K!; ISOTYPE: TCD!).

*Caesalpinia platycarpa* (Benth.) Fisher, *Bot. Gaz.* 18: 122. 1893.

*Larrea platycarpa* (Benth.) Britton, *N. Amer. fl.* 23(5): 314. 1930.

*Larrea potosina* Britton, *N. Amer. fl.* 25(5): 313. 1930. TYPE: [MEXICO]. SAN LUIS POTOSÍ. Villar, dry, calcareous soil, 15 Aug 1890, *C. G. Pringle* 7367 (HOLOTYPE: GH!).

*Larrea pueblana* Britton, *N. Amer. fl.* 23(5): 313. 1930. TYPE: MEXICO. PUEBLA. Cerro de Coatepe[c] near Oaxaca, Aug 1908, *C. A. Purpus* 3220 (HOLOTYPE: NY!; ISOTYPES: F!, GH!, MO!).

*Hoffmannseggia pueblana* (Britton) Britton, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 11 (5): 160. 1936.

*Larrea villosa* Britton, *N. Amer. fl.* 23(5): 313. 1930. TYPE: MEXICO. HIDALGO. Mountain slopes, Ixmiquilpan, Jul 1905, *C. A. Purpus* 1369a (HOLOTYPE: NY!).

DISTRIBUTION AND HABITAT: Mexico in calcareous soils in the states of Hidalgo, Nuevo León, Oaxaca, Puebla, Querétaro, and Tamaulipas at elevations of 1700–2300 m (Simpson, 1999, Fig. 4 as *H. gladiata*).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Lacking.

This species has vestiture very similar to that of *Hoffmannseggia oxycarpa*, namely dense glandular trichomes on the pedicels and sepals. The fruits however, are most similar to those of *H. tenella*, rectangular with parallel sides and indehiscent. This species might therefore provide a link between *H. oxycarpa* and *H. tenella*, which are sister species despite the disparity in morphology. In the molecular phylogeny, *H. humilis* is not sister to the *oxycarpa-tenella* pair (Fig. 1), but the relative positions of *H. watsonii* and *H. humilis* have little support in the tree.

9. *HOFFMANNSEGGIA INTRICATA* Brandegee, Proc. Calif. Acad. Sci., ser 2, 2: 151. 1889. TYPE: MEXICO. **BAJA CALIFORNIA**. At El Campo Alemán, 24 Apr 1889, T. S. Brandegee '1889' (LECTOTYPE: GH! designated by Fisher 1892; photo SI!).

*Caesalpinia intricata* (Brandegee) Fisher, Bot. Gaz. 18: 123. 1893.

*Larrea intricata* (Brandegee) Britton, N. Amer. fl. 23(5): 311. 1930.

*Hoffmannseggia microphylla* Torr. var. *glabra* S. Watson, Proc. Amer. Acad. Arts 24: 47. 1889. TYPE: MEXICO. [**BAJA CALIFORNIA**]. Stony ridges at Los Angeles Bay, E. Palmer 543 p.p. (LECTOTYPE: GH! designated by Fisher 1892).

*Hoffmannseggia glabra* (S. Watson) Fisher var. *intricata* (Brandegee) Fisher, Contr. U.S. Natl. Herb. 1: 147. 1882.

*Caesalpinia intricata* (Brandegee) Fisher var. *glabra* (S. Watson) Fisher, Bot. Gaz. 18: 123. 1893.

DISTRIBUTION AND HABITAT: Deserts of Mexico in western Sonora and central Baja California, Mexico from sea level to 600 m (Simpson, 1999, Fig. 3).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Simpson et al., 2004, Fig. 5 B.

This low, divaricately branched shrub can be locally common in Baja California. It approaches *Hoffmannseggia microphylla* in morphology and may hybridize with it in southernmost California and northern Baja California.

10. *HOFFMANNSEGGIA MICROPHYLLA* Torr., Rep. U. S. Mex. Bound. 2: 58. 1859. TYPE: UNITED STATES. **CALIFORNIA**. Sandy desert of Colorado, [without date], A. Schott 279 (HOLOTYPE: NY!).

*Caesalpinia virgata* Fisher, Bot. Gaz. 18: 123. 1893. A necessary epithet change if this taxon is placed in *Caesalpinia* be-

cause of preoccupation of the epithet *microphylla* in *Caesalpinia*.

*Larrea microphylla* (Torr.) Britton, N. Amer. fl. 23(5): 310. 1930.

DISTRIBUTION AND HABITAT: Very common in southwestern Arizona and southern California, U.S.A., and northern Baja California, Mexico from sea level to 1000 m (Isely, 1975, Map 13 as *Caesalpinia virgata*; Simpson, 1999, Fig. 6).

CHROMOSOME NUMBER:  $2n = 24$  (Bell, 1965).

ICONOGRAPHY: Hickmann, 1993 p. 607 as *Caesalpinia virgata*.

Plants of this species are distinctive with their almost aphyllous appearance. Leaves, when present, have a terminal pinna that is much longer than the lateral pair of pinnae.

11. *HOFFMANNSEGGIA MINOR* (Phil.) Ulibarri, Darwiniana 22: 146, Fig. 6 f-h. 1979.

*Hoffmannseggia doellii* var. *minor* Phil., Anales Mus. Nac., Santiago de Chile Sec. 2 Bot. p. 19. 1891. TYPE: CHILE. [**TARAPACÁ**] Prope Sitani in Provincia Tarapacá, Jan 1866, Rahmer s.n. (HOLOTYPE: SGO 49952!; photo SI!).

DISTRIBUTION AND HABITAT: High elevations (3000–4000 m) in the Andes of Bolivia (La Paz, Oruro, Potosí), Chile (Antofagasta, Tarapacá), and northwestern Argentina (Jujuy, Salta, and Catamarca).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ulibarri, 1979, Fig. 6 f-h; Ulibarri, 1996, Fig. 7G; Fig. 2C this article.

REPRESENTATIVE SPECIMENS EXAMINED: **BOLIVIA**. La Paz. La Paz-Oruro, año 1912 (fl) Cotton s. n. (K). Potosí. Atocha-Potosí, 18-XII-1946 (fl, fr), M. Cárdenas 3739 (LIL). **CHILE**. II Región. Antofagasta: Ollagüe. Carra Amincha, 9-III-1988 (fr), Wickens et al. 71 (K). **ARGENTINA**. Jujuy. Dpto. Cochinoca: Abra Pampa, 20-I-1976 (fl, fr), A. Cabrera et al. 27434 (K, SI); Dpto. Tumbaya: 0,5 km N of

Tres Morros, 3-II-2000 (fl, fr), *B. B. Simpson* 3-II-00-1 (TEX, SI); Dpto. Rinconada Mina Pirquitas, 1-III-1954 (fl), *H. Schwabe & al.* 803 (LP, SI); Dpto. Tumbaya: Cerro Moreno, 4-II-1929 (fl, fr), *Venturi* 8137 (SI). **Salta**. Dpto Los Andes: al N de S. A. de los Cobres, 19-II-1987 (fl, fr), *E. Nicora et al.* 8929 (SI). **Catamarca**. Dpto. Belén: Laguna blanca, 24-II-1981 (fl), *A. Cabrera et al.* 32473 (SI).

Molecular studies (Simpson et al., 2004) and examination of morphology support Ulibarri's (1979) elevation of Philippi's variety of *Hoffmannseggia doellii* to specific rank. While *H. doellii* and *H. minor* are both small rosette species, they are quite distinctive. Plants of *H. minor* lack the dark capitate trichomes on the sepals and pedicels characteristic of *H. doellii*. The former also tends to have a conspicuous row of bright white short trichomes along the margins of the leaflets whereas the latter has scattered trichomes over all parts of the leaflet. The fruits of *H. minor* are short and recurved only slightly whereas those of *H. doellii* are longer and curl into a semi-circle or even a nearly complete circle.

12. *HOFFMANNSEGGIA MIRANDA* Sandwith, Bull. Misc. Inform. Kew 1934: 99. 1934. TYPE: PERU. **AREQUIPA**. Mollendo, sea level to 170 m, Aug 1932, *D. Stafford* 53 (HOLOTYPE: K!).

*Caesalpinia miranda* (Sandwith) J. F. Macbr., Publ. Field. Mus. Nat. Hist., Bot. Ser. 13(3) 1: 193. 1943.

*Hoffmannseggia stipulata* Sandwith, Bull. Misc. Inform. Kew 1939: 181. 1939. TYPE: PERU. **AREQUIPA**. Mejía, S of Mollendo in sandy dips on open hill-sides, 90–180 m, 17 Sep 1937, *D. Stafford* 899 (HOLOTYPE: K!; ISOTYPE SI!).

*Caesalpinia stipulata* (Sandwith) J. F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 13 (3) 1: 196. 1943.

**DISTRIBUTION AND HABITAT:** On sandy roadsides and on lomas (large, sandy coastal dunes) on the southern coast of Peru at elevations from sea level to 800 m.

**CHROMOSOME NUMBER:** unknown.

**ICONOGRAPHY:** Figs. 2D and 3B this article.

**REPRESENTATIVE SPECIMENS EXAMINED:** **PERU. Arequipa:** Islay, lomas de Mollendo, XI-1983 (fl), *Dillon & Dillon* 3958 (SI); Mollendo, 11-XII-1956 (fl), *R. Ferreyra* 12096 (SI, USM); Ibid, X-XI-1933 (fl, fr inmaduro), *D. Stafford* 297 (BM, K, fragm. SI); llanos de Atiquipa, 5-XI-1953 (fl), *Vargas* 10932 (SI). **Moquegua:** lomas de Ilo, 30-XI-1955 (fl, fr inmaduro), *R. Ferreyra* 11601 (SI, USM); lomas de Mostacilla, 11-12-XI-1949 (fl), *Vargas* 8576 (LIL, SI); 13.5 km NE of Islay from Arequipa, 20-II-2000 (fl), *B. B. Simpson* 20-II-00-1 (TEX, SI). Camaná, Camaná: 18.7 km NNW of Cerrillos, 21-II-200 (fl, fr), *B. B. Simpson* 21-II-00-1 (TEX, SI).

This is a very distinctive species but shows variation among different populations. The most distinctive feature is the presence of long, red or purple multicellular trichomes on the claws of the petals. Plants of this species are also larger than any of the other South America herbaceous species (plants can actually be rather woody and branched at the base), ranging up to 60 cm tall. The fruits are also distinctive in being dehiscent with each valve twisting around itself like those of *H. oxycarpa*. Plants described as *H. stipulata* have broad (to 2 mm wide) fan-shaped stipules that are deeply lacerate across the top edge. Only one or two specimens have ever been collected with stipules as large as those of the type of *H. stipulata*. However, specimens of typical *H. miranda* (and of *H. arequipensis*) have smaller stipules with basically the same shape. When branches are covered with soil, the stipules tend to be larger and the internodes shorter leading to a morphology similar to that of the type of *H. stipulata*.

The molecular study of Simpson et al., (2004) showed plants ascribed to *Hoffmannseggia arequipensis* in this article embedded in a clade of *H. miranda* samples. While we recognize *Hoffmannseggia arequipensis* here as a separate species on morphological criteria, future work might show that it is better considered as an ecological variant of *H. miranda*.



13. *HOFFMANNSEGGIA OXYCARPA* Benth. in A. Gray.

13 a. *HOFFMANNSEGGIA OXYCARPA* Benth. in A. Gray subsp. *OXYCARPA*, Pl. wright. 1: 55 (Smithsonian Contr. Knowl. 3(5): 55). 1852. Type: MEXICO. [Nuevo León.] Monterrey, *Eaton & Edwards* 12 (LECTOTYPE: K! designated by Simpson 1999); ISOLECTOTYPES: GH!, NY!).

*Caesalpinia oxycarpa* (Benth.) Fisher, Bot. Gaz. 18: 122. 1893.

*Larrea oxycarpa* (Benth.) Britton, N. Amer. fl. 23 (5): 312. 1930.

DISTRIBUTION AND HABITAT: Limestone soils in southern Texas in the United States and in Mexico in the states of Coahuila, Nuevo León, and Tamaulipas (Isely, 1975, Map 76; Simpson, 1999, Fig. 6).

CHROMOSOME NUMBER:  $2n = 24$  (Turner and Fearing, 1960).

ICONOGRAPHY: Simpson, 1999, Plate 1F.

Plants of this subspecies have red or yellow glandular trichomes on the young stems and rachises. This species is often misidentified as *Hoffmannseggia glauca*. However, the claws of the petals lack the glandular trichomes characteristic of that species. In addition, the fruits of *H. glauca* are indehiscent, lightly tomentose (sometimes with a few glandular trichomes) and sickle-shaped whereas those of *H. oxycarpa* are irregularly obtrullate, dehiscent (with the valves twisting), and densely covered with long multicellular glandular trichomes.

13 b. *HOFFMANNSEGGIA OXYCARPA* Benth. in A. Gray subsp. *ARIDA* (Rose) B. B. Simpson, *Lundellia* 2: 40. 1999.

*Hoffmannseggia arida* Rose, Contr. U.S. Natl. Herb. 10: 98. pl. 29. 1906. TYPE: MEXICO. [QUERÉTARO]: Be-

tween San Juan del Río and Cadereyta, 19 Aug 1905, *J. N. Rose & J. H. Painter* 9619 (HOLOTYPE: US!; ISOTYPE: GH!).

*Larrea arida* (Rose) Britton, N. Amer. fl. 23 (5): 313. 1930.

*Larrea hidalgensis* Britton, N. Amer. fl. 23 (5): 313. 1930. TYPE: MEXICO. HIDALGO. Ixmiquilpan, Jul 1905, *C. A. Purpus* 1369 (HOLOTYPE: NY!; ISOTYPE: GH!).

DISTRIBUTION AND HABITAT: Rocky, calcareous soils in Mexico in the states of Querétaro and Hidalgo at elevations up to 2100 m (Simpson, 1999, Fig. 6).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Rose, 1906 cited above, pl. 29.

Until the revision by Simpson (1999) this taxon was treated as a distinct species, but it has all of the unique characters of typical *Hoffmannseggia oxycarpa*: glandular capitate trichomes on the stems, leaf rachises, and fruit valves. It also has the unique feature (for North American herbaceous species) of fruits with valves that twist around themselves after dehiscent. It differs from the nominate subspecies in having black-tipped (rather than yellow or red) glandular trichomes. Both occur in calcareous soils but are disjunct between Nuevo León and Hidalgo, Mexico.

14. *HOFFMANNSEGGIA PENINSULARIS* (Britton) Wiggins, Contr. Dudley Herb. 4: 18. 1950.

*Larrea peninsularis* Britton, N. Amer. Fl. 23 (5): 311. 1930. TYPE: MEXICO. BAJA CALIFORNIA. Cucupa Mts., gravel slopes, 4 Apr 1905, *D. T. MacDougal* 114 (HOLOTYPE: NY!).

*Caesalpinia peninsularis* (Britton) Eifert, Sida 5: 43. 1972.

DISTRIBUTION AND HABITAT: Restricted in distribution to northeastern Baja Cal-

ifornia at or near sea level (Simpson, 1999, Fig. 7).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Simpson, 1999, Plate 1D; Fig. 3C this article.

This species consists of highly branched small shrubs covered with yellow capitate glandular trichomes. In morphology it resembles *Hoffmannseggia viscosa* to the extent that one of us (Ulibarri, 1996) suggested that the two might be conspecific. Molecular work (Simpson et al., 2004) clearly showed that this species is more related to the other Baja California species (*H. microphylla*, *H. intricata*) than to the South American *H. viscosa*.

15. *HOFFMANNSEGGIA PROSTRATA* Lag. ex DC., Prodr. 2: 485. 1825. TYPE: PERU. circa Lima, 1825, *Lagasca 135* (HOLOTYPE: G-DC, fiche 13561, 2: 485 TEX!).

*Caesalpinia prostrata* (Lag. ex DC.) J. F. Macbr., Publ. Field. Mus. Nat. Hist., Bot. Ser. 13(3) 1: 194. 1943.

*Larrea gracilis* Ruiz & Pav., Fl. peruv. 4, Ic. 377. 1830. LECTOTYPE: Icon 377a (and An. Inst. Bot. Cavanilles (Fl. peruv.) 14: 741. Ic 377a. 1956), designated by Ulibarri, 1996.

*Hoffmannseggia gracilis* (Ruiz & Pav.) Hook. & Arn., Bot. Misc. 3: 209. 1833.

*Hoffmannseggia pilosa* Ruiz & Pav. ex G. Don, Gen. hist. 2: 434. 1832. One of us (E.A.U. 1996) listed both this name and *Caesalpinia pilosa* Ruiz & Pav. ex G. Don (from the same publication) as synonyms of *H. prostrata*. Indeed, Don mentioned *Caesalpinia pilosa* as an herbarium name of Ruiz and Pavon, but he described the species as *Hoffmannseggia pilosa*. We do not consider *C. pilosa* Ruiz & Pav. to be a valid name since it was never published as such. The type was said to be a Ruiz and Pavón specimen in the Lambert Herbarium.

DISTRIBUTION AND HABITAT: Very widespread in sandy and stony soils in southern Peru (La Libertad, Arequipa, Moquegua, Tacna) and northern Chile (Antofagasta) at elevations ranging from 150 m to 2700 m.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ruiz and Pavon, Ic. 377 cited above.

REPRESENTATIVE SPECIMENS EXAMINED:

PERU. **La Libertad.** Lomas de Virú, 5-IX-1984 (fr), *Mostacero & Ramírez 671* (K). **Lima:** 66 km a Canta, s. fecha (fl, fr), *E. Carrillo 386* (SI); Canta, 3-III-1976 (fl, fr), *Saunders 1392* (K), La Paloma, 24-II-1952 (fl), *Saunders 145* (BM). **Arequipa,** II-1934 (fl, fr), *Stafford 305* (BM, K). **Tacna.** lomas de Jama Grande, 4-X-1957 (fl, fr), *R. Ferreyra 12505* (SI). **CHILE. II Región.** Antofagasta: Tocopilla, 9-I-1941 (fl, fr), *Barros 3542* (SI); Salar del Carmen, 24-IX-1940 (fl, fr), *Barros 3545* (SI); Taltal, X-1926 (fl, fr), *E. Werdermann 813* (BM, K).

This species, like *Hoffmannseggia glauca*, manages to live well with humans and can be found along roadsides and in and around cultivated fields. It shares with its sister species, *H. miranda* (and *H. arequipensis*), conspicuous multicellular trichomes on the claws of the petals. However, the trichomes of *H. prostrata* are clavate, yellow, and shorter (less than 0.5 mm) than those of *H. miranda* which are red-purple (sometimes yellow) and range from 0.5 to 2 mm in length. The overall aspect with the multiflowered spike of yellow flowers and the straight to slightly curved fruit is reminiscent of *H. glauca* leading to frequent misidentifications. The two differ primarily in fruit. After flowering, the flowers of *H. glauca* bend downward. The mature fruit is indehiscent, has parallel sides and a rounded tip and curves upward forming an arc. The flowers of *H. prostrata* remain upright after flowering. The mature fruits are straight with a pointed tip. They are tardily dehiscent with each valve twisting around itself.

16. *HOFFMANNSEGGIA PUMILIO* (Griseb.) B. B. Simpson, Syst. Bot. 29: 938. 2004.

*Caesalpinia pumilio* Griseb., Abh. Königl. Ges. Wiss. Göttingen. (Symb. fl. argent.) 24: 113. 1879. TYPE: ARGENTINA. [JUJUY.] Inter Maimará et Humaguaca, May 1873. Lorentz & Hieronymus 974 (HOLOTYPE: probably at GOET [fide Ulibarri, 1996]; ISOTYPES: CORD! K!, SI!).

C. *riojana* Kurtz ex Hosseus, Bol. Acad. Nac. Ci. Republ. Argent. 26: 146, f. 26. 1924. TYPE: ARGENTINA. LA RIOJA. Famatina, cumbre de la Sierra de Vilgo, near Vilgo, Feb 1896, G. Bodenbender 53 (HOLOTYPE: CORD!; ISOTYPE: SI!).

C. *pumilio* Griseb. var. *riojana* (Hosseus) Burkart, Revista Argent. Agron. 3(2): 93. 1936.

DISTRIBUTION AND HABITAT: Southern Bolivia and northwestern Argentina in the provinces of Catamarca, Jujuy, La Rioja, and San Juan at elevations of 1000–4000 m.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Hosseus, 1924, f. 26 cited above; Burkart, 1936 cited above, Figs. 1a, b, lam. 6B; Ulibarri, 1996, Fig. 5A.

REPRESENTATIVE SPECIMENS EXAMINED: ARGENTINA. Jujuy. Dpto. Humahuaca: Qda. de Cactaca, I-1933 (fr), A. Burkart 5592 (SI); Sierra de Zenta, 5-III-1929 (fl, fr), Venturi 8309 (BM, K, SI). Catamarca. Dpto. Belén: Barranca Larga, II-1937 (fl), Schreiter 10328 (SI). La Rioja. Dpto. Famatina: Qda. de la Aguadita, 2-III-1967 (fl, fr), A. Cabrera & al. 18079 (SI). San Juan. Dpto. Iglesia: camino al Valle del Cura, 25-I-1981 (fl), R. Kiesling 3261 (SI).

This species was described as a *Caesalpinia* in 1878 and remained in that genus until Simpson et al. (2004) placed it in *Hoffmannseggia* after molecular work clearly showed that it is sister to *H. drummondii*. It is the only South American member of the genus that is completely woody.

17. *HOFFMANNSEGGIA REPENS* (Eastw.) Cockerell, Muhlenbergia 4: 68. 1908.

*Caesalpinia repens* Eastw., Zoë 4: 116. pl. 26. 1893. TYPE: UNITED STATES. UTAH. Grande Co.: Court House Wash, SE

Utah, 25 May 1892 [given as 26 May in the protologue], A. Eastwood s.n. (HOLOTYPE: CAS!; ISOTYPES: CAS!, GHI, MO!, POM!, RSA!).

*Moparia repens* (Eastw.) Britton & Rose, N. Amer. fl. 23(5): 317. 1930.

DISTRIBUTION AND HABITAT: Extremely limited in distribution to a region of dunes and rocky soil in eastern Utah and neighboring Colorado at elevations of 900–1900 m (Isely, 1975, Map 77; Simpson, 1999, Fig. 3).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Eastwood, 1908, pl. 27 cited above; Fig. 3D this article.

This species, known as the creeping rush-pea, is one of the most distinctive in the genus. Plants are low growing and presumably spread via rhizomes in the dunes. The leaves are almost feathery with overlapping leaflets. The flowers that arch downward when in bloom are bright yellow fading to pink to pale orange. The fruits are oblong to almost oval in outline (but pointed at the ends), very flattened, undulate, and broad (10–20 mm wide).

18. *HOFFMANNSEGGIA TENELLA* Tharp & L. O. Williams, Ann. Missouri Bot. Gard. 23: 451. 1936. TYPE: UNITED STATES. TEXAS. Nueces Co.: Robstown to Alice, 22 Nov 1931, F. E. Clements 128b (HOLOTYPE: TEX!; ISOTYPES: TEX (2)!, MO!).

DISTRIBUTION AND HABITAT: Endemic to the blackland prairie region of Texas in Nueces and Kleberg counties, basically at sea level (Isely, 1975, Map 78; Simpson, 1999, Fig. 7).

CHROMOSOME NUMBER: Unknown.

ICONOGRAPHY: Simpson, 1999, Plate 1E; Fig. 3E this article.

This diminutive species (usually much less than 20 cm tall) is the only species of *Hoffmannseggia* that is listed in the United States as Federally Endangered. Because of

the destruction of its habitat due to agriculture, the species is now restricted to a few areas such as graveyards and unplowed roadsides. Its most distinguishing feature is the straight fruit pointed at both ends. Molecular data strongly support its being sister to *Hoffmannseggia oxycarpa*, but in morphology it more closely resembles *H. watsonii*.

19. *HOFFMANNSEGGIA TRIFOLIATA* Cav., Icon. 4: 64, t. 393. 1798. TYPE: ARGENTINA. Habitat in America meridionalis portu Deseado, [without collector]. (HOLOTYPE: MA, photograph Field Mus. 29419 at TEX! SI!).

*Hoffmannseggia trifoliata* forma *microphylla* Speg., Anales Soc. Ci. Argent. 47: 281. 1899. TYPE: ARGENTINA. **Buenos Aires.** Ptdo. Patagones, in the maritime zone, La Verde, Bahía San Blas, Feb 1898, *C. Spegazzini s.n.* (HOLOTYPE: LPS 11939 in LP! ISOTYPE: F!; photo SI!).

*Hoffmannseggia trifoliata* Cav. var. *microphylla* (Speg.) Ulibarri, Darwiniana 22: 152. 1979.

*Hoffmannseggia trifoliata* Cav. forma *glaberrima* Speg., Anales Soc. Ci. Argent. 47: 281. 1899. TYPE: [ARGENTINA]. **Chubut.** Emelkaik, Rio Chico, Jan 1897, *C. Spegazzini s.n.* (HOLOTYPE: LPS 11936 in LP!; ISOTYPE: F!; photo SI!).

*Hoffmannseggia trifoliata* Cav. forma *normalis* Speg., Anales Soc. Ci. Argent. 47: 281. 1899. TYPE: [ARGENTINA]. **Chubut.** Dry Rio Negro, Feb. 1898, *C. Spegazzini s.n.* (SYNTYPE: LPS 11931 in LP!; ISOSYNTYPE: F!; photo SI!).

*Hoffmannseggia trifoliata* Cav. forma *glandulosa* Speg., Soc. Ci. Argent. 47: 282. 1899. TYPE: [ARGENTINA]. **Río Negro.** La Pantanosa, dry Rio Negro, Feb. 1898. *C. Spegazzini s.n.* (HOLOTYPE: LPS 11935 in LP!; ISOTYPE: F!; photo SI!).

DISTRIBUTION AND HABITAT: Primarily in open grassy areas in central and southern Argentina in the provinces of Neu-

quén, Río Negro, Chubut, Santa Cruz, Buenos Aires, and La Pampa. Also reported from Aysén in southern Chile.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ulibarri, 1979 Fig. 7 a-c; Ulibarri, 1996, Fig. 8 d.

REPRESENTATIVE SPECIMENS EXAMINED: **ARGENTINA.** Neuquén. Dpto. Confluencia: Plaza Huincul, s. fecha (fl, fr), *Monticelli I-59* (SI). **Buenos Aires.** Ptdo. Patagones: Carmen de Patagones, 21-X-1937, *Miccio Peralta s. n.* (SI 1391). **La Pampa.** Dpto. Caleu-Caleu: ca. Río Colorado, 15-IV-1943 (est.), *Bartlett 19952* (SI). **Río Negro.** Dpto. San Antonio: Las Cuevas, 6-I-1975 (fl, fr), *G. Marsans s. n.* (SI 26996). **Chubut.** Dpto. Telsen: 5 km antes de Gan-Gan hacia Telsen, 24-XI-1967 (fl), *E. Gómez-Sosa 396* (SI). **Santa Cruz.** Dpto. Copen Aike, ruta 3 Río chico, 13-XII-1975 (fl, fr), *M. Correa & al. 6678* (SI). **CHILE.** XI Región. Aisén. Coyahaique, 20-I-1946 (fl), *Barros 7235* (SI).

This species is variable in its own right and hybridization with *Hoffmannseggia erecta* (see above) has undoubtedly added to the confusion when trying to place a name on a particular specimen. In an article in which he described new entities for Patagonia, Spegazzini (1899) listed four named entities (*microphylla*, *glaberrima*, *normalis*, and *glandulosa*) each preceded by a letter that he explicitly stated in the text were forms. He also described a variety, *H. trifoliata* var. *pentaphylla* (see below). In the revision of *Hoffmannseggia* of Argentina (Ulibarri 1979) and later in the synopsis of *Caesalpinia* and *Hoffmannseggia* for South America (Ulibarri 1996), one of us listed only one of these, *microphylla*. He gave its rank as variety and ascribed it to Spegazzini (with the publication and page number where it was listed as one of the four forms). We have included in the synonymy the other forms given by Spegazzini and, like the International Plant Names Index, attributed to Ulibarri the change in rank from forma to variety.

This species is most easily confused with *Hoffmannseggia erecta* but can usually be distinguished from it by the possession of only one pair of pinnae in addition to

the terminal pinna and by its more pointed leaflets. In general, plants of this species are more robust than those of *H. erecta*.

Probable hybrid:

*Hoffmannseggia trifoliata* Cav. var. *pentaphylla* Spæg., Anales Soc. Ci. Argent. 47: 282. 1899. TYPE: [ARGENTINA]. [Río Negro or Neuquen] In arid sand at the confluence of the Limay and Nequen Rivers, Dec 1897, *C. Spegazzini s.n.* (HOLOTYPE: LPS 11925 in LP!).

When he described this variety, Spegazzini stated that in habit it was similar to his forma *normalis* and *microphylla* and suggested that it was a hybrid between *Hoffmannseggia trifoliata* and *H. falcaria* (= *H. glauca*). Ulibarri (1979) concluded that it was a hybrid, but between *H. trifoliata* and *H. erecta*.

20. *HOFFMANNSEGGIA VISCOSA* (Ruiz & Pav.) Hook., Bot. Misc. 3: 209. 1833.

*Larrea viscosa* Ruiz & Pav., Fl. peruv. 4: t. 377. 1830. (Reprinted as Anales Inst. Bot. Cavanilles (Fl. Peruv.) 14: 742, Ic. 377b. 1956.) TYPE: Icon 377b in Ruiz & Pav. Fl. peruv. 4. 1830 [chosen by Hook. & Arn., Bot. Misc. 3: 209. 1833].

*Caesalpinia viscosa* (Ruiz & Pav.) Fisher, Bot. Gaz. 18: 123. 1893.

*Hoffmannseggia falcaria* Cav. var.  $\beta$  Hook. & Arn., Bot. Misc. 2: 217. 1831. TYPE: PERU. At Yazo in Valley of Canta (HOLOTYPE: K!; fragment SI!). An invalid name because of the use of a letter rather than a species epithet.

*Hoffmannseggia falcaria* Cav. var. *glandulosa* Hook. & Arn., nom. illeg. Bot. Misc. 3: 209: 1832. An epithet for the var.  $\beta$  described the previous year. By stating in this publication that this taxon is the same as *Larrea viscosa* Ruiz & Pav., Hooker and Arnott created a superfluous name and hence this name is illegitimate.

*Hoffmannseggia ternata* Phil., Anales Mus. Nac., Santiago de Chile Sec. 2 Bot. p. 19.

1891. TYPE: CHILE. TARAPACÁ. Chismisa, 17-III-1885 *Rahmer s.n.* (HOLOTYPE: SGO 49964!; photo SI!).

*Caesalpinia ternata* (Phil.) J. F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 13 (3) 1: 196. 1943.

*Hoffmannseggia viscosa* var. *egena* J. F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 8: 93. 1930. TYPE: PERU. Moquegua. Mt. Estuquiña, NW of Moquegua, rainy-green formation, 16–1800 m, 22 Mar 1925, *A. Weberbauer 7419a* (HOLOTYPE: F!).

*Caesalpinia egena* (J. F. Macbr.) J. F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 13 (3) 1: 192. 1943.

DISTRIBUTION AND HABITAT: Coastal sands to high elevation roadsides from northern Chile (Tarapacá) across western Peru (Tacna, Arequipa, Ica, Ancash, Lima, Cajamarca, Lambayeque, Piura) to southernmost Ecuador (Loja).

CHROMOSOME NUMBER:  $2n = ca. 24$  (Diels, 1961).

ICONOGRAPHY: Ruiz and Pavon, t. 377 cited above; Fig. 2E, Fig. 3F this article.

REPRESENTATIVE SPECIMENS EXAMINED: PERU. Arequipa. Camaná. Camaná: 7 km NW of Ocoño, 21-II-2000 (fl, fr), *B. B. Simpson 21-II-00-2* (TEX, SI); Caraveli: 7.4 km W of the turn to Atiquipa, 22-II-2000 (fl, fr), *B. B. Simpson 22-II-00-3* (TEX, SI). Cajamarca. El Potachuelo, Ascope-S. Benito, 17-V-1979 (fl, fr), *A. Sagáségui et al. 9223* (SI). Lambayeque. Pampa Las Delicias, Reque, 5-II-1986 (fl, fr), *Llatas Quirós 1763 y 1767* (SI). Lima. District of Choclla, 27-XII-1953 (fl, fr), *Saunders 138* (BM); Valle del Rimac, 27-IV-1947 (fl, fr), *Velarde 472* (LIL). Piura. Paita-Piura, 1-I-1964 (fl, fr), *Hutchinson & Wright 3357* (K). CHILE. I Región. Tarapacá: Cord. Qda. de Quipisca, Parca, III-1926 (fl, fr), *E. Werdermann 1112* (LIL) y *1113* (SI); Qda. de Chacarilla, 85 km al SE de Pica, 2-II-1981 (fl), *J. Hunziker 9838* (SI); Arica, rt. 11, 40 km E of Poncochile, 15-II-2000 (fl, fr. inmad.), *B. B. Simpson 15-II-00-1* (TEX, SI).

This is a confusing species as treated here and it is not clear that we have dealt with it correctly. The two most commonly named entities in this complex are *Hoff-*

*mannseggia viscosa* and *H. ternata*. However, in herbaria there is no consistency in how they are treated. One of us (Ulibarri 1996) separated the two on the basis of pinnae (1 pair in the case of *H. ternata* and (1)2–4 pair in the case of *H. viscosa*), leaflet number (4–5 pairs in *H. ternata* and 5–9 pairs in *H. viscosa*), and stipule shape (ovate and 1 mm long in *H. ternata*, deltoid and 1–2.5 mm long in *H. viscosa*), but these characters are completely intermixed across the geographical range although there is a tendency for the number of pinnae to increase from northern Chile to southern Ecuador. In other characters, there is extreme variability, but no consistent pattern, across the geographic range. Some populations have plants that are comparatively upright and others very prostrate. Some plants are densely glandular pubescent while others are completely glabrous. Plants can have small fruits (6 mm long, usually on glabrous plants) rather crescent-shaped in outline but other populations have arcuate fruits up to 20 mm long. For the molecular study we sampled seven populations with various combinations of morphological traits. Results from combined molecular ITS 1 & 2 and the *trnL-trnF* spacer and intron sequences showed all types to be intermixed (Simpson et al., 2004). In terms of typification, the types of the two are the same entity, highly branched and very glandular plants. Thus we treat *H. ternata* as a synonym of *H. viscosa*. Consequently if the more gracile, glabrous form is ultimately found to be a distinct species, it will need a new name.

This taxon is exceedingly weedy and grows through the tarmac on highways and along roadsides. It appears to be autogamous and the variation seen could be the result of founder effects and inbreeding.

21. *HOFFMANNSEGGIA WATSONII* (Fisher) Rose, Contr. U.S. Natl. Herb. 10: 98. 1906.

*Hoffmannseggia gracilis* S. Watson, *nom. illeg.* [later homonym]. Proc. Amer.

Acad. Arts 17: 347. 1882. TYPE: MEXICO. COAHUILA. Sierra Madre south of Saltillo, [1880], *E. Palmer* 275 (LECTOTYPE: GH! designated by Fisher 1882; ISOLECTOTYPES: K!, NY (2)!).

*Caesalpinia watsonii* Fisher, Bot. Gaz. 18: 122. 1892. [Based on the type of *H. gracilis* S. Watson but a valid name change if the species is placed *Hoffmannseggia* because of a prior epithet *gracilis* in *Caesalpinia*].

*Larrea watsonii* (Fisher) Britton, N. Amer. fl. 23 (5): 312. 1930.

DISTRIBUTION AND HABITAT: Limestone and rocky soils in eastern Mexico in the states of Coahuila, Guanajuato, Hidalgo, and Nuevo León, at 1900–2700 m elevation (Simpson 1999, Map 7).

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Simpson 1999, Plate 1B.

This species resembles *Hoffmannseggia tenella* in having a straight fruit, but the fruits are larger (16–30 mm long) in *H. watsonii* versus 8–19 mm long in *H. tenella*. The two also differ in habitat, with *H. tenella* growing in dark clay soils and *H. watsonii* in stony, often calcareous soil.

22. *HOFFMANNSEGGIA YAVIENSIS* Ulibarri, Darwiniana 22: 147. f. 5 h-m. 1979. TYPE: ARGENTINA. JUJUY. Yavi: La Quiaca-Villazón, 24 Jan 1940. 3442 m, *R. Schreiter* 11098 (in part) (HOLOTYPE: SI!; ISOTYPE: LIL!).

DISTRIBUTION AND HABITAT: High elevation habitats of southern Bolivia and northwestern Argentina (Jujuy, Salta, Tucumán, and Catamarca) in dry soil from 3400–3600 m.

CHROMOSOME NUMBER: unknown.

ICONOGRAPHY: Ulibarri, 1979, Fig. 5 h-m; Ulibarri, 1996, Fig. 7A-C; Fig. 2F this article.

REPRESENTATIVE SPECIMENS EXAMINED: BO-

**LIVIA. Potosí.** Camargo-Potosí, II-1949 (fl) *M. Cárdenas* 4141 (LIL). **ARGENTINA. Jujuy.** Dpto. Cochino: ca. 2 km NW Abra Pampa, 1-II-2000 (fl) *B. Simpson* 1-II-005 (TEX, SI).-Dpto. Tilcara: Sierra de Zenta, II-1931 (fl, fr) *Budin* 7474 (LIL, SI). **Salta.** Dpto. Cachi: 12 km W of Piedra de Molina, 30-I-2000 (fl, fr) *B. B. Simpson* 30-I-00-1 (TEX, SI); Dpto. Chicoana, ruta 33, Cachi-Salta, 15-II-2002 (fl, fr) *A. Cialdella & al.* 290 (SI). **Catamarca.** Dpto. Santa María: El Cajón. El Abra, 13-I-1914 (fl, fr) *Castillón* 3340 (LIL, SI). **Tucumán.** Dpto. Tafí. Lara, Cumbres Calchaquíes, 9-XII-2004 (fl, fr inmaduro), *I. Peralta s. n.* (MERL, SI).

Specimens of this small perennial herb were often mislabeled as *Hoffmannseggia doellii* or *H. eremophila* (both of which it resembles because of its small size) before one of us (E.A.U) recognized that they belonged to a separate taxon (Ulibarri 1979) that he described as *H. yaviensis*. It can be distinguished from both by the lack of multicellular glandular trichomes on the sepals and pedicels. *Hoffmannseggia minor*, another small, high elevation species can be distinguished by trichomes on the sepals that are straight and appressed to the surface whereas those of *H. yaviensis* are short and curly.

DISPOSITION OF NAMES AND TAXA  
PLACED AT VARIOUS TIMES IN  
*HOFFMANNSEGGIA*

Names in **bold** are accepted. For others, current, accepted placement is given after the “ = ” sign. Accepted species are treated alphabetically in this revision. *H.* refers to *Hoffmannseggia* and *C.* to *Caesalpinia*.

*Caesalpinia bangii* Rusby = *C. fimbriata* Tul. (fide Ulibarri, 1996). When Rusby described this species he listed it as *Caesalpinia (Hoffmannseggia) bangii* which has led to its occasional erroneous (since the combination was never made) listing as ‘*H. bangii*.’

*Caesalpinia chicamana* Killip & J. F. Macbr. = *H. glauca* (Ortega) Eifert

*Caesalpinia drepanocarpa* (A. Gray) Fisher = *H. drepanocarpa* A. Gray

*Caesalpinia drummondii* (Torr. & A. Gray) Fisher = *H. drummondii* Torr. & A. Gray  
*Caesalpinia egena* (J. F. Macbr.) J. F. Macbr. = *H. viscosa* (Ruiz & Pav.) Hook.

*Caesalpinia falcaria* (Cav.) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia falcaria* (Cav.) Fisher var. *capitata* (Fisher) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia falcaria* (Cav.) Fisher var. *densiflora* (Benth.) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia falcaria* (Cav.) Fisher var. *pringlei* (Fisher) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia falcaria* (Cav.) Fisher var. *rusbyi* (Fisher) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia falcaria* (Cav.) Fisher var. *stricta* (Benth.) Fisher = *H. glauca* (Ortega) Eifert

*Caesalpinia fisheriana* Rusby = *C. trichocarpa* Griseb. (fide Ulibarri, 1996). When Rusby described this species he listed it as *Caesalpinia (Hoffmannseggia) fisheriana* which has led to its occasional erroneous (since the combination was never made) listing as ‘*H. fisheriana*.’

*Caesalpinia gladiata* (Benth.) Fisher = *H. humilis* (Mart. & Galeotti) Hemsley

*Caesalpinia glauca* (Ortega) Kuntze = *H. glauca* (Ortega) Eifert

*Caesalpinia intricata* (Brandege) Fisher = *H. intricata* Brandege

*Caesalpinia intricata* (Brandege) Fisher var. *glabra* (S. Watson) Fisher = *H. intricata* Brandege

*Caesalpinia miranda* (Sandwith) J. F. Macbr. = *H. miranda* Sandwith

*Caesalpinia oxycarpa* (Benth.) Fisher = *H. oxycarpa* Benth. subsp. *oxycarpa*

*Caesalpinia peninsularis* (Britton) Eifert = *H. peninsularis* (Britton) Wiggins

*Caesalpinia platycarpa* (Benth.) Fisher = *H. humilis* (Mart. & Galeotti) Hemsley

*Caesalpinia prostrata* (DC.) J. F. Macbr. = *H. prostrata* Lag. ex DC.

*Caesalpinia pumilio* Griseb. = *H. pumilio* (Griseb.) B. B. Simpson

- Caesalpinia pumilio* Griseb. var. *riojana* (Hosseus) Burkart = *H. pumilio* (Griseb.) B. B. Simpson
- Caesalpinia repens* Eastw. = *H. repens* (Eastw.) Cockerell
- Caesalpinia riojana* Kurtz ex Hosseus = *H. pumilio* (Griseb.) B. B. Simpson
- Caesalpinia rosulata* Rusby = *C. trichocarpa* (fide Ulibarri, 1996). When Rusby described this species he listed it as *Caesalpinia* (*Hoffmannseggia*) *rosulata* which has led to its occasional erroneous (since the combination was never made) listing as '*H. rosulata*.'
- Caesalpinia stipulata* (Sandwith) J. F. Macbr. = *H. miranda* Sandwith
- Caesalpinia ternata* (Phil.) J. F. Macbr. = *H. viscosa* (Ruiz & Pav.) Hook.
- Caesalpinia texensis* (Fisher) Fisher = *H. drummondii* Torr. & A. Gray
- Caesalpinia virgata* Fisher = *H. microphylla* Torr.
- Caesalpinia viscosa* (Ruiz & Pav.) = *H. viscosa* (Ruiz & Pav.) Hook.
- Caesalpinia watsonii* Fisher = *H. watsonii* (Fisher) Rose
- Hoffmannseggia andina* Miers, an invalid name, *nomen nudum*.
- Hoffmannseggia andina* Gill ex Hook. & Arn., an invalid name, *nomen nudum*
- Hoffmannseggia andina* Phil. = *H. eremophila* (Phil.) Burkart
- Hoffmannseggia andina* Phil. var. *eremophila* (Phil.) Reiche = *H. eremophila* (Phil.) Burkart
- Hoffmannseggia andina* Miers var. *eremophila* (Phil.) Reiche, an invalid name since the species *H. andina* Miers is a *nomen nudum*.
- Hoffmannseggia arida* Rose = *H. oxycarpa* Benth. subsp. *arida* (Rose) B. B. Simpson
- Hoffmannseggia brachycarpa* A. Gray = *Pomaria brachycarpa* (A. Gray) B. B. Simpson
- Hoffmannseggia burchelli* (DC.) Benth. = *Pomaria burchellii* (DC.) B. B. Simpson & G. P. Lewis
- Hoffmannseggia burchelli* (DC.) Benth. subsp. *rubro-violacea* (Baker f.) Brummitt & J. H. Ross = *Pomaria burchellii* (DC.) B. B. Simpson & G. P. Lewis
- Hoffmannseggia canescens* Fisher = *Pomaria canescens* (Fisher) B. B. Simpson
- Hoffmannseggia caudata* A. Gray = *C. caudata* (A. Gray) Fisher
- Hoffmannseggia chicamana* (Killip & J. F. Macbr.) Eifert = *H. glauca* (Ortega) Eifert
- Hoffmannseggia chilensis* Miers, an invalid name, *nomen nudum*
- Hoffmannseggia demissa* Benth., and invalid name, *nomen nudum*
- Hoffmannseggia densiflora* Benth. = *H. glauca* (Ortega) Eifert
- Hoffmannseggia doelli* Phil.
- Hoffmannseggia doelli* Phil. var. *minor* Phil. = *H. minor* (Phil.) Ulibarri
- Hoffmannseggia drepanocarpa* A. Gray
- Hoffmannseggia drummondii* Torr. & A. Gray
- Hoffmannseggia erecta* Phil.
- Hoffmannseggia eremophila* (Phil.) Burkart ex Ulibarri
- Hoffmannseggia falcaria* Cav. *nom illeg.* = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* var.  $\beta$  Hook. & Arn. = *H. viscosa* (Ruiz & Pav.) Hook. Invalid name because of the use of a symbol for the subspecific name.
- Hoffmannseggia falcaria* Cav. var. *andicola* Hook. & Arn. = *H. erecta* Phil.
- Hoffmannseggia falcaria* Cav. var. *andina* Phil. = *H. eremophila* (Phil.) Burkart
- Hoffmannseggia falcaria* Cav. var. *capitata* Fisher = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* Cav. var. *demissa* A. Gray = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* Cav. var. *densiflora* (Benth.) Fisher = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* Cav. var. *glandulosa* Hook. & Arn. = *H. viscosa* (Ruiz & Pav.) Hook. Invalid name
- Hoffmannseggia falcaria* Cav. var. *pringlei* Fisher = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* Cav. var. *rusbyi* Fisher = *H. glauca* (Ortega) Eifert
- Hoffmannseggia falcaria* Cav. var. *stricta*



- (Benth.) Fisher = *H. glauca* (Ortega) Eifert
- Hoffmannseggia fruticosa* S. Watson = *Pomaria fruticosa* (S. Watson) B. B. Simpson
- Hoffmannseggia glabra* (S. Watson) Fisher var. *intricata* (Brandege) Fisher = *H. intricata* Brandege
- Hoffmannseggia gladiata* Benth. = *H. humilis* (Mart. & Galeotti) Hemsley
- Hoffmannseggia glandulosa* (Cav.) Torr. & A. Gray = *Pomaria glandulosa* Cav.
- Hoffmannseggia glauca*** (Ortega) Eifert
- Hoffmannseggia gracilis* (Ruiz & Pav.) Hook. & Arn. = *H. prostrata* Lag. ex DC.
- Hoffmannseggia gracilis* S. Watson, nom. illeg. [later homonym] = *H. watsonii* (Fisher) Rose
- Hoffmannseggia humilis*** (Mart. & Gal.) Hemsley
- Hoffmannseggia insolita* Harms = *C. insolita* (Harms) Brenan & J. B. Gillet.
- Hoffmannseggia intricata*** Brandege
- Hoffmannseggia jamesii* Torr. & A. Gray = *Pomaria jamesii* (Torr. & A. Gray) B. B. Simpson
- Hoffmannseggia lactea* (Schinz) Schinz = *Pomaria lactea* (Schinz) B. B. Simpson & G. P. Lewis
- Hoffmannseggia melanosticta* (S. Schauer) A. Gray = *Pomaria melanosticta* S. Schauer
- Hoffmannseggia melanosticta* (S. Schauer) A. Gray var. *parryi* Fisher = *Pomaria melanosticta* S. Schauer
- Hoffmannseggia microphylla*** Torr.
- Hoffmannseggia microphylla* Torr. var. *glabra* S. Watson = *H. intricata* Brandege
- Hoffmannseggia minor*** (Phil.) Ulibarri
- Hoffmannseggia miranda*** Sandwith
- Hoffmannseggia montana* (Britton) McVaugh = *Pomaria glandulosa* Cav.
- Hoffmannseggia multijuga* S. Watson = *Pomaria multijuga* (S. Watson) B. B. Simpson
- Hoffmannseggia nana* Chodat & Wilcz. = *H. erecta* (fide Ulibarri, 1996)
- Hoffmannseggia oxycarpa*** Benth. subsp. ***oxycarpa***
- Hoffmannseggia oxycarpa*** Benth. subsp. ***arida*** (Rose) B. B. Simpson
- Hoffmannseggia parryi* (Fisher) B. L. Turner = *Pomaria melanosticta* S. Schauer
- Hoffmannseggia parviflora* Micheli = *Pomaria parviflora* (Micheli) B. B. Simpson & G. P. Lewis
- Hoffmannseggia patagonica* Speg. = *H. erecta* Phil.
- Hoffmannseggia pearsonii* Phillips = *Pomaria lactea* (Schinz) B. B. Simpson & G. P. Lewis
- Hoffmannseggia peninsularis*** (Britton) Wiggins
- Hoffmannseggia philippiana* Hosseus = *H. eremophila* (Phil.) Burkart & Ulibarri
- Hoffmannseggia pilosa* Ruiz & Pav. = *H. prostrata* Lag. ex DC.
- Hoffmannseggia platycarpa* Benth. = *H. humilis* (Mart. & Galeotti). Hemsley
- Hoffmannseggia prostrata*** Lag. ex DC.
- Hoffmannseggia pueblana* (Britton) Britton = *H. humilis* (Mart. & Galeotti) Hemsley
- Hoffmannseggia pumilio*** (Griseb.) B. B. Simpson
- Hoffmannseggia repens*** (Eastw.) Cockerell
- Hoffmannseggia rubro-violacea* Baker f. = *Pomaria burchellii* (DC.) B. B. Simpson & G. P. Lewis
- Hoffmannseggia sandersonii* (Harv.) Engl. = *Pomaria sandersonii* (Harv.) B. B. Simpson & G. P. Lewis
- Hoffmannseggia sandersonii* (Harv.) Engl. var. *lactea* Schinz = *Pomaria lactea* (Schinz) B. B. Simpson & G. P. Lewis
- Hoffmannseggia stipulata* Sandwith = *H. miranda* Sandwith
- Hoffmannseggia stricta* Benth. = *H. glauca* (Ortega) Eifert
- Hoffmannseggia stricta* Benth. var. *demissa* A. Gray = *H. glauca* (Ortega) Eifert
- Hoffmannseggia striola* C. Muell. "sphalm" for *H. stricta* = *H. glauca* (Ortega) Eifert
- Hoffmannseggia tenella*** Tharp & L. O. Williams
- Hoffmannseggia ternata* Phil. = *H. viscosa* (Ruiz & Pav.) Hook.
- Hoffmannseggia texensis* Fisher = *H. drummondii* Torr. & A. Gray

**Hoffmannseggia trifoliata** Cav.  
*Hoffmannseggia trifoliata* Cav. forma *glaberrima* Speg. = *Hoffmannseggia trifoliata* Cav.  
*Hoffmannseggia trifoliata* Cav. forma *glandulosa* Speg. = *H. trifoliata* Cav.  
*Hoffmannseggia trifoliata* Cav. forma *microphylla* Speg. = *H. trifoliata* Cav.  
*Hoffmannseggia trifoliata* Cav. var. *microphylla* (Speg.) Ulibarri = *H. trifoliata* Cav.  
*Hoffmannseggia trifoliata* Cav. forma *normalis* Speg. = *H. trifoliata* Cav.  
*Hoffmannseggia trifoliata* Cav. var. *pentaphylla* Speg. = hybrid between *H. trifoliata* Cav. and *H. erecta* Phil.  
**Hoffmannseggia viscosa** (Ruiz & Pav.) Hook.  
*Hoffmannseggia viscosa* var. *egena* J. F. Macbr. = *H. viscosa* (Ruiz & Pav.) Hook.  
**Hoffmannseggia watsonii** (Fisher) Rose  
**Hoffmannseggia yaviensis** Ulibarri  
*Larrea arida* Rose = *H. oxycarpa* Benth. subsp. *arida* (Rose) B. B. Simpson  
*Larrea densiflora* (Benth.) Britton = *H. glauca* (Ortega) Eifert  
*Larrea drepanocarpa* (A. Gray) Britton = *H. drepanocarpa* A. Gray  
*Larrea drummondii* (Torr. & A. Gray) Britton = *H. drummondii* Torr. & A. Gray  
*Larrea gladiata* (Benth.) Britton = *H. humilis* (Mart. & Gal.) Hemsley  
*Larrea glauca* Ortega = *H. glauca* (Ortega) Eifert  
*Larrea gracilis* Ruiz & Pav. = *H. prostrata* Lag. ex DC.  
*Larrea hidalgensis* Britton = *H. oxycarpa* Benth. subsp. *arida* (Rose) B. B. Simpson  
*Larrea humilis* (Mart. & Galeotti) Britton = *H. humilis* (Mart. & Galeotti) Hemsley  
*Larrea intricata* (Brandege) Britton = *H. intricata* Brandege  
*Larrea microphylla* (Torr.) Britton = *H. microphylla* Torr.  
*Larrea oxycarpa* (Benth.) Britton = *H. oxycarpa* Benth. subsp. *oxycarpa*.  
*Larrea peninsularis* Britton = *H. peninsularis* (Britton) Wiggins  
*Larrea platycarpa* (Benth.) Britton = *H. humilis* (Mart. & Galeotti) Hemsley

*Larrea potosina* Britton = *H. humilis* (Mart. & Galeotti) Hemsley  
*Larrea pueblana* Britton = *H. humilis* (Mart. & Galeotti) Hemsley  
*Larrea texensis* (Fisher) Britton = *H. drummondii* Torr. & A. Gray  
*Larrea villosa* Britton = *H. humilis* (Mart. & Galeotti) Hemsley  
*Larrea viscosa* Ruiz & Pav. = *H. viscosa* (Ruiz & Pav.) Hook.  
*Larrea watsonii* (Fisher) Britton = *H. watsonii* (Fisher) Rose  
*Moparia repens* (Eastw.) Britton & Rose = *H. repens* (Eastw.) Cockerell  
*Pomaria humilis* Mart. & Galeotti = *H. humilis* (Mart. & Galeotti) Hemsley  
*Zuccagnia eremophila* Phil. = *H. eremophila* (Phil.) Burkart ex Ulibarri

#### ACKNOWLEDGEMENTS

Many people contributed over the years to the study of *Hoffmannseggia*. Jack Neff drove across two continents helping to collect material and taking countless pictures. Leah Larkin, Joshua McDill, Jennifer Tate, and Andrea Weeks all worked with us on the phylogeny and biogeography of the genus. Gwen Gage composed the illustrations in this and other publications on the genus. Richard Spellenberg and Tom Wendt both gave the manuscript a critical reading and made many helpful suggestions.

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