

## PASSIFLORACEAE PASSIONFLOWER FAMILY

John M. MacDougal  
Missouri Botanical Garden  
P. O. Box 299  
St. Louis, MO 63166

Perennial tendril-climbing vines, shrubs or trees. LEAVES alternate, mostly simple, pinnately to palmately veined, unlobed or palmately lobed, entire or serrate, often bearing extrafloral nectary glands, especially on the petiole; stipules setaceous to foliaceous. INFLORESCENCES axillary, fundamentally cymose, part of the inflorescence often developed into a tendril; bracts setaceous to foliaceous or rarely absent. FLOWERS usually perfect; sepals (3-)5(-8); petals as many as sepals or absent; perianth sometimes connate basally into a floral tube; extrastaminal corona present as 1-many series of filaments or outgrowths, sometimes membranous; extrastaminal disk of staminodal origin usually present; stamens (4-)5-many, borne on hypanthium or on androgynophore, sometimes the filaments connate into a tube around the ovary; ovary of (2-)3-5 carpels, unilocular, superior, usually borne on short stalk, or elongated stalk with stamens; placentation parietal; styles distinct. FRUITS capsules or berries. SEEDS with the testa pitted, reticulate, or grooved. —19 genera, 650 spp. mainly tropical regions.

### **Passiflora** L. Passion flower

Perennial tendril-climbing vines, rarely shrubs or small trees. LEAVES often heteroblastic, usually bearing extrafloral nectaries on the petiole and/or lamina; tendrils axillary, simple in ours. INFLORESCENCE with peduncles paired or solitary, arising colateral to the tendril; peduncles articulate distal to the bracts; bracts in ours setaceous to foliaceous or pinnatifid. FLOWERS perfect (sometimes pistil-sterile); perianth sometimes connate/adnate basally into a conspicuous floral tube, floral cup, or hypanthium, but this only flattish to campanulate in AZ plants; sepals 5; petals 5 in ours; corona 1-many series of often showy filaments, the innermost series usually connate and membranous, shielding the nectar chamber, and called the operculum; extrastaminal nectariferous disk (limen) present as ring or cup around base of androgynophore; stamens 5 in ours, borne on an elongate androgynophore; carpels 3 in ours, the stigmas 3, the ovary borne on androgynophore. FRUITS mostly berries. SEEDS arillate, dark, compressed, punctate-reticulate or transversely grooved. —500 spp.; mainly neotropical regions. (for the passion, or suffering, of Christ). Killip, E. P. 1938. *Publ. Field Mus. Nat. Hist., Bot. Ser.* 19:1-613. MacDougal, J. M. 1994. *Syst. Bot. Monogr.* 41:1-146.

1. Leaves deeply bilobed, the central vein shortest; floral corona red or reddish purple; fruit purplish black; seeds transversely grooved ..... *P. mexicana*
- 1' Leaves 3-5 lobed, the central vein longest; floral corona white or white with purple or violet; fruit yellowish, greenish, brown, or whitish; seeds reticulately pitted.
2. Stipules subfalcate to narrowly ovate auriculate, entire, without gland tipped segments; petioles conspicuously 2 glandular in distal quarter; bracts less than 8 mm long, setaceous to linear lanceolate, entire; trichomes hooked (uncinate) at tips . *P. bryonioides*
- 2' Stipules deeply cleft nearly to base into elongate segments, the segments gland tipped or not; petioles not glandular, or glands only on numerous trichome-like cilia; bracts more than 15 mm long, deeply bipinnatisect; trichomes straight ..... 3
3. Stipules divided into numerous obviously gland-tipped segments; plant body densely pilose; bracts lightly pilose, heavily glandular; seeds more than 3 mm wide ..... *P. foetida*

- 3' Stipules divided into several segments, one much longer than the rest, these not gland tipped; plant body densely pale lanate; bracts lanate, not glandular; seeds less than 2.5 mm wide ..... *P. arida*

***Passiflora arida*** (Mast. & Rose) Killip (of drylands). —Prostrate vine 1-3 m long, very densely pale lanate throughout, and without apparent glandular trichomes. LEAVES palmately 3-5 lobed, the margins obscurely serrate, not ciliate; petiole without obvious gland tipped cilia; stipules cleft to near base into several nonglandular segments, one much longer than the others. BRACTS ca. 20-30 mm long, 12-25 mm wide, lanate, deeply bipinnatifid, the segments or teeth not obviously glandular tipped. FLOWERS ca 4 cm in diameter, whitish, the corona violet and white; sepals subequal to or slightly shorter than petals; coronal filaments in ca. 6 series, the outermost 10-14 mm long, the inner ca. 4 series 2 mm or less long; ovary pilose. FRUITS ca. 2-3 cm in diameter, subglobose or widely ellipsoid, greenish, yellowish, or brown. SEEDS ca. 3.8-4.6 mm long, 2.0-2.2 mm wide, pitted, apically 1-3-dentate. —Pima co.; 900 m (2950 ft); Jun-Oct (fr. Jul-Oct); Son. to Baja Calif., Mex. —An apparent recent introduction, this is naturalized in the Tucson area.

***Passiflora bryonioides*** Humb. Bonpl. & Kunth (*Bryonia* like). —Vine (0.5-)1-2 m long, with annual stems from thickened roots, pubescent to short hirsute throughout, with uncinat trichomes. LEAVES (3-)5-lobed, not variegated, the margins serrate to serrate incised or lobed; laminar nectaries absent or 1-2 per sinus, submarginal; petioles 2 glandular in distal quarter; stipules widely falcate to narrowly ovate auriculate, long caudate, entire. BRACTS 2-7 mm long, 0.2-0.6 mm wide, setaceous to linear lanceolate. FLOWERS ca. 2.5-4.5 cm in diameter, whitish with purplish bands on corona; sepals slightly longer than petals; coronal filaments 1 series, 7-12 mm long; ovary glabrous. FRUITS 3-4.5 cm long, 2-2.5 cm wide, ovoid, conical at apex, pale green with green stripes, whitish apically. SEEDS minutely pitted.  $2n = 12$ . [*P. inamoena* A.Gray]. —Riparian, shrub transition: Pima, Santa Cruz cos.; 1100-1250 m (3600-4100 ft); Jun-Sep (fr. Aug-Oct); Son. to Oax., Mex.

***Passiflora foetida*** L. (stinking). —In AZ a vine 0.5-3 m long, densely pilose throughout. LEAVES palmately 3(-5) lobed, the margins usually erose serrate or incised serrate, ciliate with gland tipped cilia; petiole with gland tipped cilia; stipules cleft to near base into numerous conspicuous gland tipped cilia or segments. BRACTS 18-27 mm long, 7-15 mm wide (to 45 mm long, 27 mm wide in fruit), lightly pilose, deeply bipinnatifid, the segments, cilia, or teeth glandular tipped. FLOWERS ca 4-5.5 cm in diameter, whitish, the corona white or purplish; sepals subequal to or slightly shorter than petals; coronal filaments in ca. 6 series, the outermost 10-17 mm long, the inner ca. 4 series 2 mm or less long; ovary long pilose. FRUITS ca. 2.5-3 cm in diameter, globose or widely ellipsoid, greenish or yellowish. SEEDS ca. 5.6-6.3 mm long, 3.3-3.9 mm wide, pitted, apically tridentate. —Outcrops in desert grasslands: Pima, Santa Cruz cos.; 1150-1700 m (3700-5600 ft); Jun-Oct (fr. Aug-Oct); Son., Mex., and widespread throughout tropical America, introduced in warm regions worldwide.

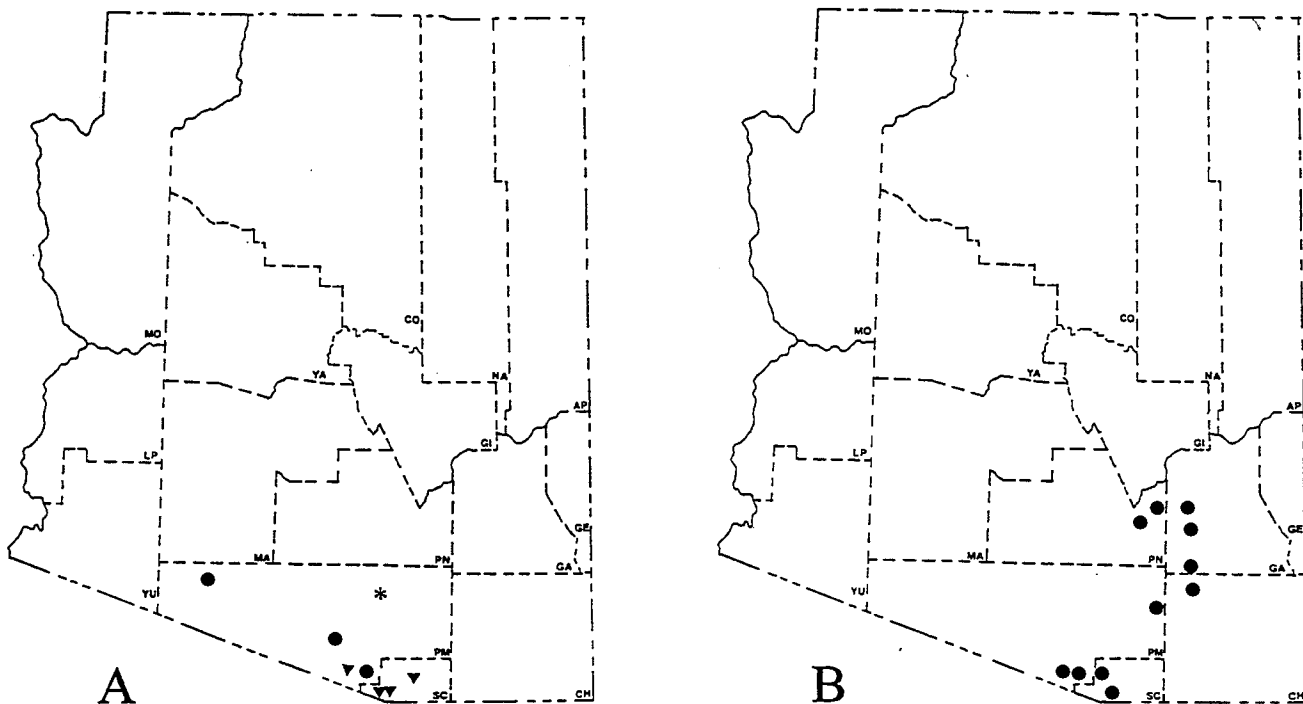
This species has 38 varieties according to the last monographer, Killip. The one variety (var. *arizonica* Killip) that he recognizes as occurring in Arizona might deserve recognition at the species level. It differs from other vars. in having leaves that are deeply lobed, with the central lobe often narrowed near its base, the lateral lobes themselves lobed, and the margins erose serrate.

***Passiflora mexicana*** Juss. (of Mexico) —Vine 2-8 m long, glabrous throughout. LEAVES bilobed, occasionally variegated, the margins entire; laminar nectaries borne abaxially between the main veins; petioles eglandular; stipules setaceous to linear triangular, subfalcate. BRACTS 1.5-4 mm long, 0.2-0.8 mm wide, setaceous to narrowly lanceolate, often 3-toothed. FLOWERS

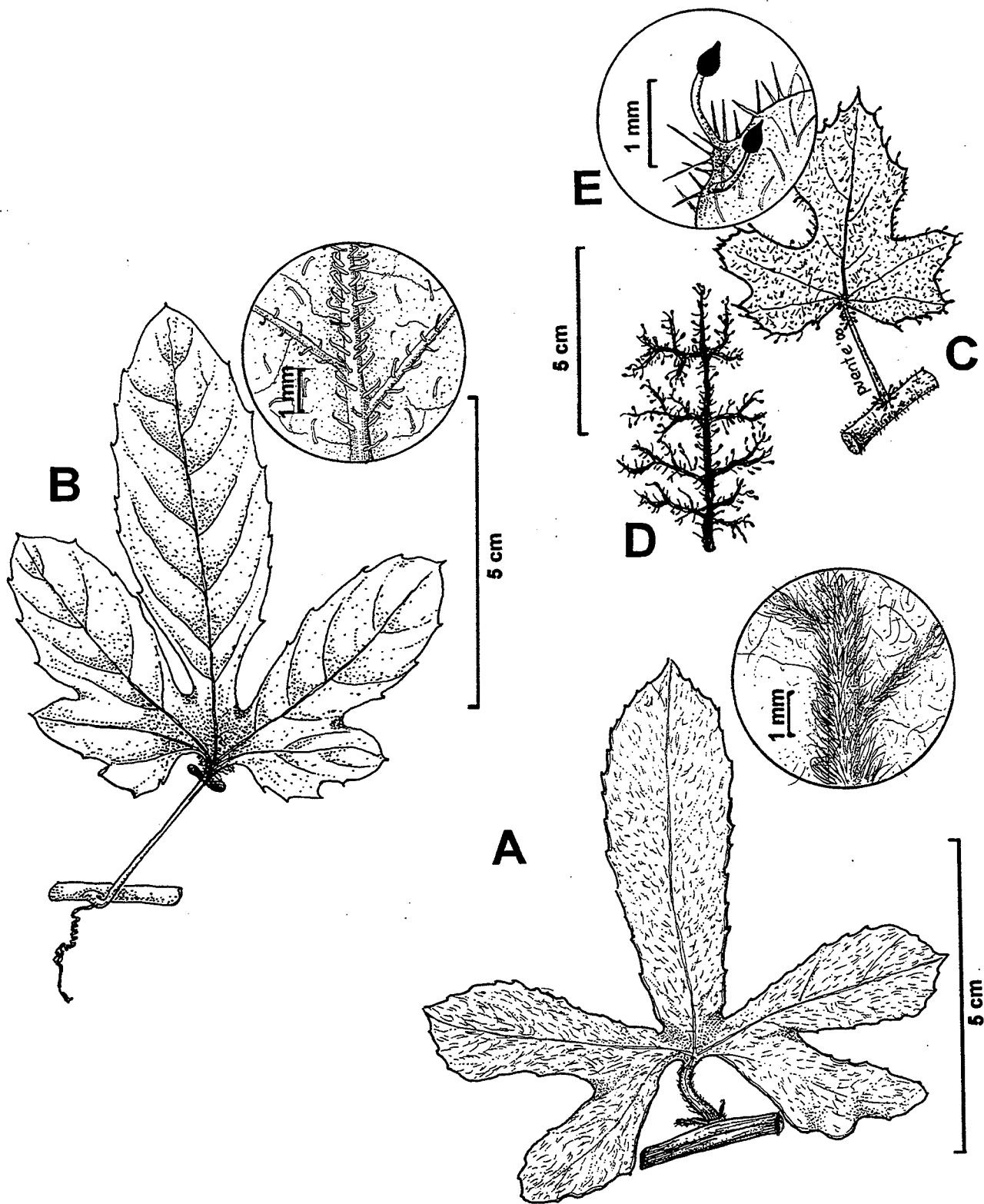
ca. 2-3 cm in diameter, light green or yellowish green, the corona red or reddish purple; sepals much longer than the inconspicuous petals, coronal filaments in 2 series, the outer 8-12 mm long, the inner 2 mm long; ovary glabrous or nearly so. FRUITS 0.8-1.6 cm long, subglobose to widely ellipsoid, purplish black. SEEDS transversely grooved. —Thickets near riparian zones and washes: Cochise, Graham, Pima, Pinal, Santa Cruz cos.; 750-1250 m (2500-4100 ft); Jul-Oct (fr. Jul-Oct); Son. to Chis., Mex.

#### ACKNOWLEDGMENTS

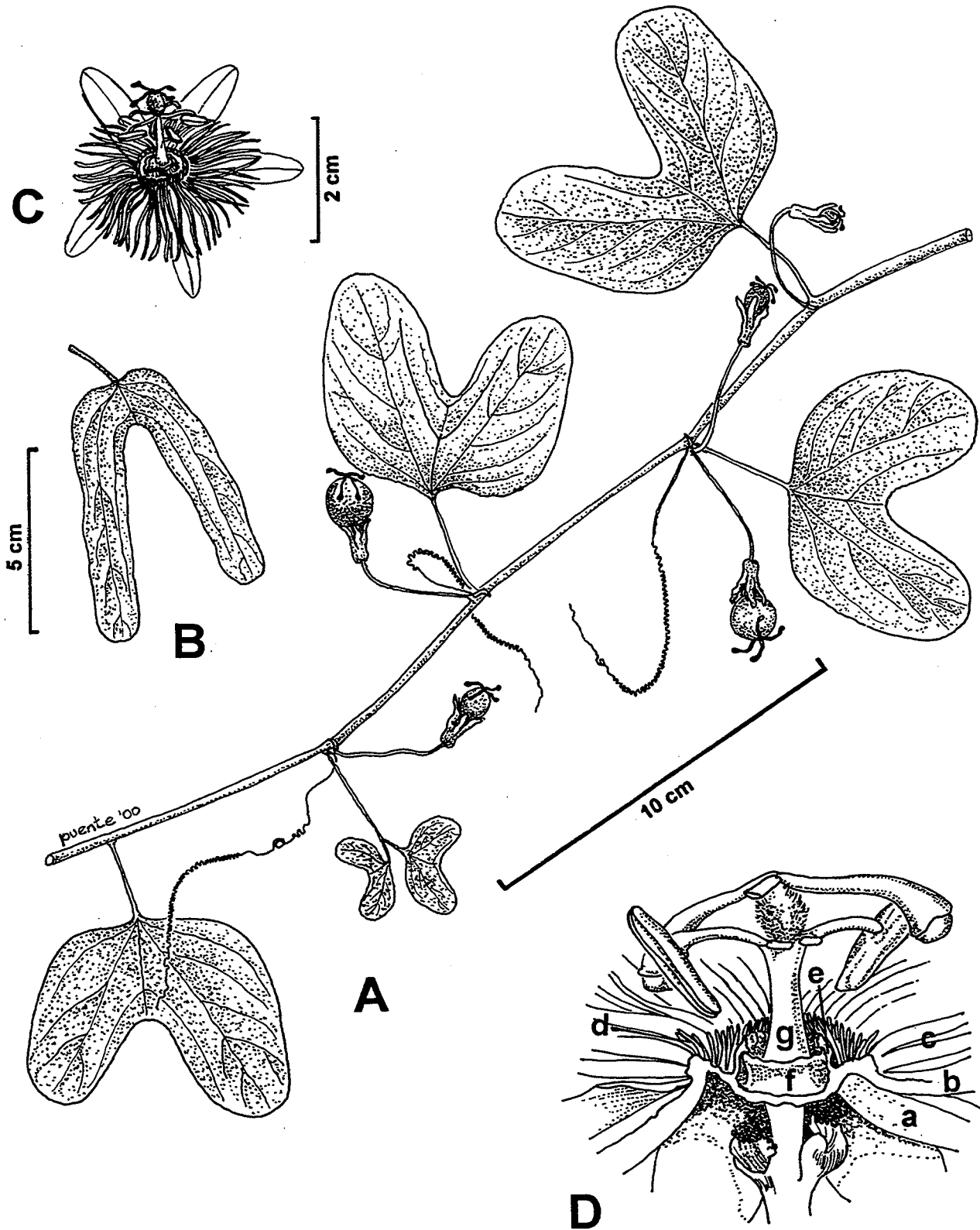
I am indebted to Douglas Goldman for sharing notes on his current investigations involving the biogeography of *Passiflora arida* and its introduction to the flora of Arizona.



**Passifloraceae.** Fig. 1. Distribution of *Passiflora*: A, *P. bryonioides* (triangles), *P. foetida* (dots), *P. arida* (asterisk); B, *P. mexicana*.



**Passifloraceae.** Fig. 2. A, *Passiflora arida*, leaf and detail of trichomes in abaxial surface; B, *P. bryonioides*: leaf and detail of trichomes; C, *P. foetida*: leaf; D, detail of bracts with glands. E, detail of leaf margin with trichomes and glands.



**Passifloraceae.** Fig. 3. A-C, *Passiflora mexicana*, A, branch with fruits; B, leaf showing variation in shape; C, flower; D, generalized flower of *Passiflora*: a, sepal; b, petal; c, outer corona; d, inner corona; e, operculum; f, limen; g, androgynophore.