of *Topobea*, but the posture and orientation of its androecium is unlike that of other congeners with free anthers. In the erect-flowered species of *Topobea* with free anthers, the filaments are declined to one side of the flower opposing the style and the anthers are typically erect or somewhat incurved apically. In *T. fragrantissima* this orientation is taken to such an extreme that both filaments and anthers lie flat on the surface of the petals to form a semicircular configuration (Fig. 10A). In this unusual androecial orientation the ventral surface of the anther faces upward and the dorsal surface (including the dorsally inclined pore) face downward toward the petal surface.

Field observations of pollination in this species should be of special interest because this pollen presentation mechanism is coupled with the production of a perfume-like fragrance. The unusual anther posture and orientation of the pore may require some peculiar manipulative behavior on the part of bees if this species is buzz-pollinated like the majority of species in the family with poricidally dehiscent anthers.

*Topobea fragrantissima* is similar to *T. suaveolens* (also described below) in a number of characters, and it seems likely that these two species are closely related. The shape and venation of mature leaf blades are nearly identical. In the few known collections of *T. suaveolens*, however, foliar pocket domatia (Fig. 12B) are formed abaxially in the angle between the median vein and the innermost pair of lateral veins; domatia are lacking in *T. fragrantissima*. The differences between these species are most readily apparent when fresh flowers are examined. In *T. suaveolens* the connivent petals give the pendant flowers a bell-like conformation, the free stamens form a ring around the straight style, and the ovary is 6-celled. The most distinctive feature shared by the two species is the solitary anther pore. Within the Blakeae, this derived character is known in other species. *Topobea acuminata* Wurduck, *T. caudata* Wurduck, *T. dodsonorum* Wurduck, and *T. pittieri* Cogn. are a few notable examples. The fact that solitary anther pores occur in more than one species complex within *Topobea* suggests that this character has arisen more than once in the course of its evolutionary history.

The name for this species is derived from *fragrantissima*, Latin for sweet smelling, in reference to the perfume-like fragrance of fresh flowers.

**Topobea hexandra** Almeda, sp. nov. (Fig. 11)

**Type.—Panama.** Panamá: Cerro Jefe, along summit road and along trail into the Chagres Valley, elev. ca. 900 m, 19 Feb. 1988, Almeda et al. 5837 (holotype: CAS; isotypes: CR!, DUKE!, FL!, MO!, NY!, PMA!, TEX!, US!)

Frutex hemiepiphyticus. Ramuli primum sulcato-quadrangulari dumi teretes glabri (in nodis cadix puberulus pilis castaneis ca. 0.5–1 mm longis). Petiolii 5–14 mm longi; lamina 2.3–3.9 × 1.1–1.3 cm subrotundata vel elliptico-ovata apice rotundato vel obtuso basi late acuta vel obtusa vel rotundata, 3-nervata coriacea et integra, nervis secundarior nervalusque inavis. Flores 6-meri sessiles vel subsessiles in quoque nodo superiore singuli vel bini; bracteae omnino liberae; bracteae exteriores 3–6.5 × 3–5 mm ovatae vel ovato-ellipticae apice obtuso vel mcruronato; bracteae interiores 4–5 × 4–6 mm late ovatae vel subovatae apice rotundato. Hypanthium ad torum 3 mm longum extus sparsissulcud caduceque stellulato-furfuraceum; calycis tubus 1 mm longus, lobis 2 mm longis. Petala 6.5–7 × 4 mm obovato-elliptica apice obtusa. Filamenta 3 mm longa; antherae 6, ca. 2 × 1 mm oblongae inter se non cohaerentes, ventraliter biperosa; connivitum ad basim dorsaliter dente 0.25 mm descendentie armatum. Stylus 5.5 mm; ovarium 2-loculare et omnino inferum apice glabro (cono et collo non evoluto).

Hemiepiphytic shrubs to 1 m tall adhering to the bark of host trees by nodal and internodal adventitious roots. Distal branchlets quadrate to quadrilirate, glabrous or sparsely beset with spreading, deciduous, glandular hairs 1–2 mm long like the young petioles and upper and lower surfaces of the juvenile leaves; older branches rounded with leaf scars that are typically swollen and nodular in appearance. Uppermost nodes copiously beset with brown spreading hairs. Vegetative buds copiously covered with a deciduous brown stellate-lepidote indument. Leaves of a pair equal in size, glabrous throughout; petioles 5–14 mm long; mature blades coriaceous, 2.3–3.9 cm long and 1.1–3 cm wide, subobtuse to elliptic-ovate, apex rounded or varying to obtuse, base obtuse to rounded, rarely varying to acute, margin entire, 3-nerved, often with an additional intramarginal pair of depressed veins. Flowers erect, solitary or paired in the leaf axils of distal branches, sessile or subsessile with short (to 1 mm) ill-defined pedicels formed by the compressed bases of the outer floral bracts. Floral bracts thick and semisucculent, sessile, entire and free to the base, sparingly stellulate-furaceous abaxially; outer bracts 5–6.5 × 3–5 mm, concave, ovate to elliptic-ovate, apex obtuse to bluntly mucronate; inner bracts 4.5–5 × 4–6 mm, broadly ovate to subobtuse, apex rounded. Hypanthium (at anthesis) narrowly campanulate,
Figure 11. *Topobea hexandra* Almeda. A, habit; B, representative leaf (abaxial surface); C, enlargement of distal node showing spreading hairs; D, representative flower (natural posture); E, petal (abaxial surface); F, stamens, ventral view (left), lateral view (right); G, berry with persistent floral bracts removed; H, abaxial surface of inner floral bract (left), abaxial surface of outer floral bract (right); I, seeds. (A–H from the holotype; I from Witherspoon 8552.)
3 mm long to the torus and 4–5 mm in diameter, sparingly stellate-lepidote or stellulate-furfuraceous. Calyx tube 1 mm long; calyx lobes erect, 2 mm long and 2–2.5 mm wide basally, ovate to deltoid-ovate, entire but irregularly roughened along interlobe sinuses, sparingly stellate-lepidote. Petals 6, liberally covered with disc-shaped hyaline processes, 6.5–7 × 4 mm, pink, elliptic-ovate, apically obtuse, entire. Stamens 6, isomorphic and free; filaments complanate and glabrous, 3 mm long, declinate, but incurved distally bringing the anthers to an incurred position opposing the style; anthers 2 mm long, 1 mm wide, pale yellow, turning brownish orange with age. Ovary 5 mm long, oblong; onblosed with two ventrally inclined pores at the broadly rounded apex; connective slightly thickened and dilated dorsally at the filament insertion into a short blunt spur up to 0.25 mm long. Ovary completely inferior, 2-celled, sparingly beset with stellate-lepidote hairs, glabrous at the summit surrounding the stylar scar but not distended into a prominent cone or collar. Style declinate, incurred distally, glabrous, 5.5 mm long; stigma punctiform. Berry globose, 5–6 mm long and 4–7.5 mm in diameter. Seeds bluntly deltoid, 1–1.5 mm long, beige with a smooth glossy testa and conspicuous lateral raphe.

**Phenology.**—The only known flowering specimens were collected in February; fruiting collections have been made in February, September, October, and December.

**Distribution.**—Endemic to the low cloud forests on Cerro Jefe in central Panama at 900–1,000 m (Fig. 8).


Collections of *T. hexandra* are few despite the fact that it is one of the most common shrubby epiphytes in the forest at the summit of Cerro Jefe. In the field, fertile material is evidently overlooked without the aid of binoculars, because the small flowers are produced on uppermost branchlets positioned high on host trees where access to sunlight is optimal.

*Topobea hexandra*, together with *T. cordata*, *T. caliginosa* and *T. crassifolia*, form a closely related species group best interpreted as a specialized evolutionary line within the genus. They are distinguished from other congeners by a combination of specialized features associated with great reduction in flower size. These are: (1) flowers sessile or short-pedicellate (2–3 mm) at anthesis; (2) diminutive petals (4.5–9 × 1.5–6 mm); (3) each flower has only six stamens, each of which is attached to the torus opposite a calyx lobe; and (4) the ovary is 2-celled or 4-celled. The stamen number in *T. crassifolia* and *T. caliginosa* was unknown to me when I described these taxa, because all available study material had flowers with detached stamens (Almeda 1980). Recent collections of these two species and *T. cordata* clearly show that they are all hexandrous. The reduction in stamen number exhibited by this group of species is otherwise unknown in the tribe.

Among its close allies, *T. hexandra* is most similar to *T. caliginosa*. Both species have 3-nerved leaves, translucent petals that have a liberal scattering of hyaline disc-shaped gland-like processes, and 2-celled ovaries. *Topobea caliginosa* differs in having glabrous uppermost nodes, oblanceolate to spatulate, basally attenuate leaf blades, confluent anther pores, and unappendaged anther connectives.

Within its restricted range, *T. hexandra* shows inconstancy in characters of the indument. Distal branchlets can either be glabrous or sparsely beset with spreading glandular hairs. When present these hairs are found on distal internodes, petioles of juvenile foliage, and on upper and lower surfaces of some young leaves, but most of the hairs appear to fall away with age. All specimens of the type collection are devoid of glandular hairs. Mori & Kallunki 3755 and Witherspoon 8552 are beset with hairs as described above, but Almeda & Nakai 3459, which consists of two branches, has hairs on one branch but not on the other. Unfortunately, *T. hexandra* is known from too few collections to determine which, if any, of these forms constitutes the prevalent condition.

The epithet for this species is derived from the Greek words *hex*, six, and *andro*, male, in reference to the 6-stamened flowers.

**Topobea parvifolia** (Gleason) Almeda, comb. nov.


**Type.**—PANAMA. Cocle: crest of Cerro Pajita, El Valle de Antón, 1,100 m, Allen 3761 (holotype: NY; isotype: MO).