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# A New Species of *Passiflora* (Passifloraceae) from Ecuador with Notes on the Natural History of Its Herbivore, *Heliconius* (Lepidoptera: Nymphalidae: Heliconiiti)

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**ABSTRACT.** A new species of *Passiflora*, *P. telesiphe*, is described in subgenus *Decaloba*. This species was discovered as a result of observations on the natural history and foodplants of a butterfly (*Heliconius telesiphe*—Lepidoptera: Nymphalidae: Heliconiiti), whose young stages were previously unknown. The new species and its herbivore are illustrated. The relationships of *P. telesiphe* to other similar Ecuadorean species of *Passiflora* are briefly discussed.

***Passiflora telesiphe*** S. Knapp & Mallet, sp. nov.

TYPE: Ecuador. Zamora—Chinchipe: first ford (km 10 from Zamora) on the old Loja—Zamora road, ca. 1700 m, cultivated plant grown from Mallet 33 from this locality, 24 July 1995, Knapp 9124 (holotype, BM; isotypes, MO, QCNE). Figures 1a–c, 2.

Species haec a *P. hirtiflora* P. M. Jørgensen & Holm-Nielsen foliis purpureis brevior et sparsior pubescentibus, serie coronali exteriori longissime, differt.

Herbaceous vine; young stems angulate, minutely puberulent, the trichomes ca. 0.5 mm, simple and uniseriate, very slender, drying white; new growth cernuous; stipules 1.5–2.5 mm, linear and somewhat falcate, deciduous, the margins ciliate with trichomes like those of the stems; tendrils axillary, minutely puberulent. Leaves with upper surface dark green, occasionally variegated with white around the midrib, undersurface dark purple, minutely puberulent on both surfaces, hanging down as if wilted; petiole 1–1.5 cm, glandless, minutely puberulent; blade 3–8 × 5–11 cm, elliptic to elliptic lanceolate, with three main veins from the base between which are borne 14–19 ocellate glands, these somewhat pale above, the base acute, the margins entire, the apex three-lobed, each lobe terminating in an elongate mucro. New growth leaves and stems purple, changing to green when older.

Flowers solitary or more often paired at each node, pendent, with no discernible odor; pedicel 2.5–3 cm, pale burgundy-purplish, minutely puberulent; bracts usually spaced ca. 1.5 mm apart in the distal ¼ of the pedicel, 7–13 × 2–5 mm, elliptic to ovate, persistent, greenish, tinged purple on live plants, drying brown, the tip long-acuminate, with a few scattered trichomes like those of the stems; buds white, minutely puberulent; sepals 2.0–2.5 cm long, narrowly triangular, membranous, pale greenish, drying white, minutely puberulent with scattered trichomes, reflexed at anthesis; petals 1.0–1.4 cm, narrowly triangular, thin and membranous, white, glabrous, reflexed at anthesis; corona biseriate, the outer filaments 2.2–2.6 cm, narrowly ligulate, white flushed with purple, especially adaxially in the lower ⅓, the inner filaments 3–5 mm, erect, greenish white, purple flecked near the tips, the extreme tips somewhat fimbriate, expanded and white; operculum plicate, incurved, ca. 4 mm, greenish, purple near the tips; limen annular, 1–1.5 mm high, bright yellow-green; androgynophore 6–8 mm, dark purplish burgundy; free stamen filaments 4–5 mm, the anthers 3–4 mm, pollen bright yellow; ovary 3–4 mm long, pale burgundy purple, densely pubescent with uniseriate trichomes less than 0.5 mm long, the styles ca. 5 mm, dark burgundy purple (like the androgynophore), the stigmas globose, bright green. Fruit unknown.

*Passiflora telesiphe* is a member of subgenus *Decaloba* (DC.) Reichenbach, with a plicate operculum, ocellate laminar nectaries, and cernuous new growth. It is likely a member of section *Pseudogranadilla* (Harms) Killip, where its close relatives are *P. hirtiflora* P. M. Jørgensen & Holm-Nielsen, *P. subpurpurea* P. M. Jørgensen & Holm-Nielsen, and perhaps *P. indecora* HBK, all of which are Ecuadorian endemics. All of these species are unusual in *Passiflora* in having foliaceous, verticillate



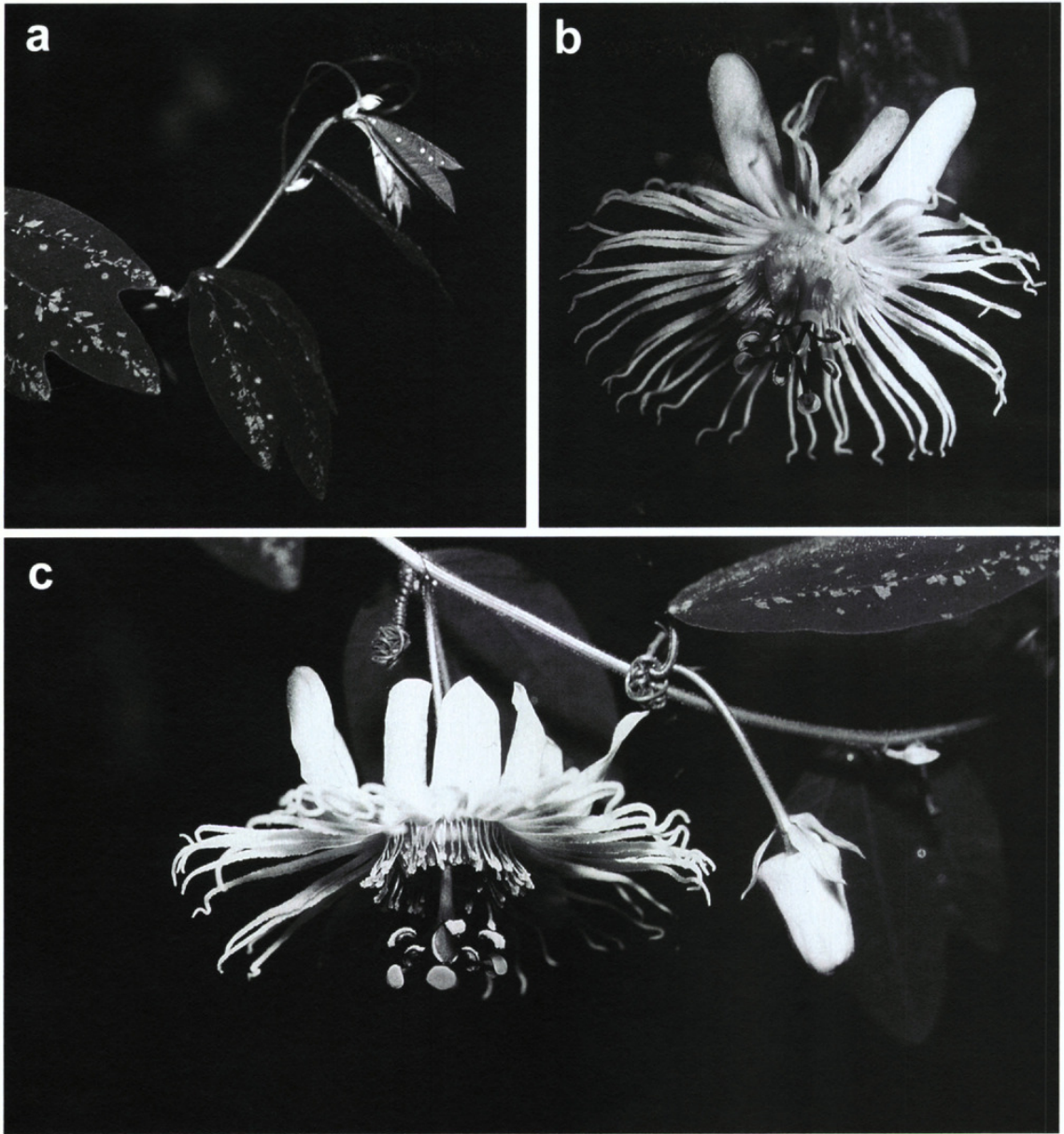


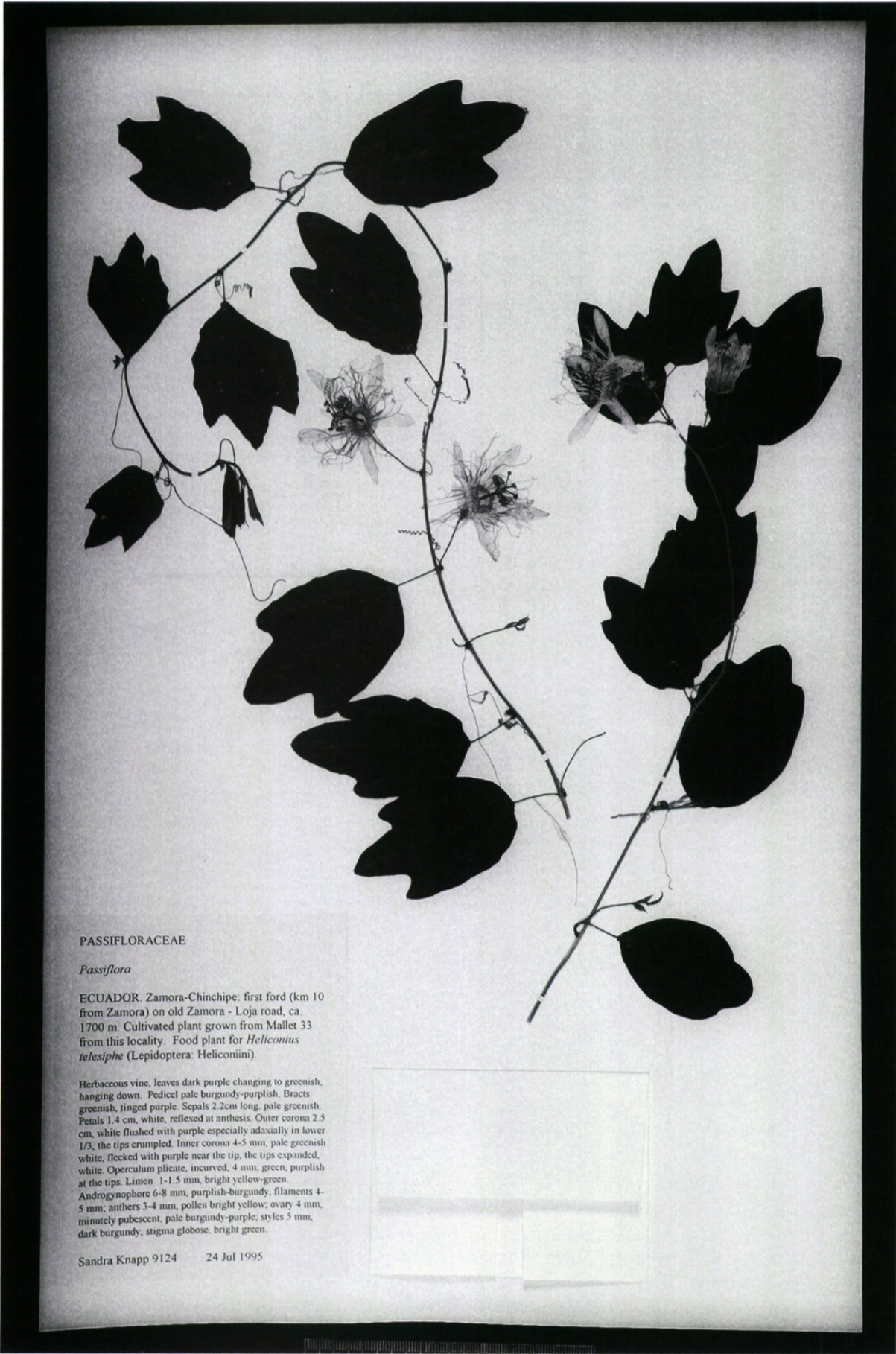
Figure 1. *Passiflora telesiphe* S. Knapp & Mallet (Knapp 9124, cultivated).—a. Fertile shoot showing characteristic new growth and leaf position.—b. Flower, close-up showing coronal rows.—c. Flower and bud.

bracts near the base of the flowers. Section *Pseudogranadilla* (sensu Killip, 1938) is apparently not monophyletic, but the Ecuadorian species seem to be closely related and may form a distinct clade within the group.

The sister species of *Passiflora telesiphe* is most probably *P. hirtiflora*. *Passiflora hirtiflora* and *P. telesiphe* share the peculiar habit, otherwise unknown in the genus, of having the leaves hanging down, apparently wilting, at all times (see Fig. 1). Plants in cultivation (MO: *P. hirtiflora* fide J. MacDougal and in the United Kingdom: *P. telesiphe*) are very similar in appearance at first glance, but differ in their degree of pubescence, with *P. hirtiflora* being much more pubescent and with lon-

ger trichomes (1–3 mm vs. ca. 0.5 mm). The two species also share falcate stipules that dry brownish, and large floral bracts. The flowers of *P. telesiphe* are strikingly different from those of *P. hirtiflora*, with the outer row of corona filaments being longer than the petals and sepals (Fig. 1), while the outer corona row in *P. hirtiflora* is only ca.  $\frac{1}{2}$  or less the length of the sepals (ca. 1–1.2 cm long) and is much less delicate. *Passiflora telesiphe* is also similar to *P. subpurpurea* in that its leaves are purple abaxially but differs from *P. subpurpurea* in its overall pubescence and long corona filaments. Also potentially included in this group of Ecuadorian species with large floral bracts is *P. indecora*, which differs from *P. telesiphe* in its bilobed leaves,





PASSIFLORACEAE

*Passiflora*

ECUADOR. Zamora-Chinchi: first ford (km 10 from Zamora) on old Zamora - Loja road, ca. 1700 m. Cultivated plant grown from Mallet 33 from this locality. Food plant for *Heliconius telesiphe* (Lepidoptera: Heliconiini).

Herbaceous vine, leaves dark purple changing to greenish, hanging down. Pedicel pale burgundy-purplish. Bracts greenish, tinged purple. Sepals 2.2 cm long, pale greenish. Petals 1.4 cm, white, reflexed at anthesis. Outer corona 2.5 cm, white flushed with purple especially adaxially in lower 1/3, the tips crumpled. Inner corona 4-5 mm, pale greenish white, flecked with purple near the tip, the tips expanded, white. Operculum plicate, incurved, 4 mm, green, purplish at the tips. Limen 1-1.5 mm, bright yellow-green. Androgynophore 6-8 mm, purplish-burgundy, filaments 4-5 mm; anthers 3-4 mm, pollen bright yellow; ovary 4 mm, minutely pubescent, pale burgundy-purple; styles 5 mm, dark burgundy; stigma globose, bright green.

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Figure 2. Holotype of *Passiflora telesiphe* (BM).



smaller flowers, and very short (4–5 mm) outer coronal row.

*Paratypes.* ECUADOR. **Zamora–Chinchipe:** first ford above Zamora (km 10, Zamora–Loja) on the old Loja–Zamora road, ca. 1700 m, 21 Nov. 1993, *Mallet 33* (BM, MO).

*Passiflora telesiphe* was discovered with the aid of a butterfly. On 21 Nov. 1993, a male of *Heliconius telesiphe telesiphe* (Lepidoptera: Nymphalidae: Heliconiini) was seen hovering at a pupa of *Heliconius* attached to the plant of *Passiflora telesiphe* (*Mallet 33*) from which all other specimens cited here are clones. The pupa showed no obvious differences from that of *Heliconius erato* (Beebe et al., 1960). After several minutes, another male *H. telesiphe* arrived and hovered closely at the pupa. The pupa was kept, and later eclosed as a female *Heliconius telesiphe*. We found a number of yellow eggs on the same plant; when reared through, these also proved to be *H. telesiphe*. In the last instar, the creamy white black-spotted larvae (Fig. 3a, b) were typical for the *erato* group and similar to *Heliconius erato* or *H. charitonia* in that they had paired facial black spots on the front of the head (these facial spots were smaller than in either of the latter species). As far as we know, this is the first record of the young stages of *Heliconius telesiphe*, which, although a relatively common Andean butterfly in its narrow band of altitudes between 800 m and 2000 m from southern Colombia to Bolivia, has a poorly known biology. The young stages will be described in detail by Carla Penz (pers. comm. 1996), who reared eggs and larvae of *H. telesiphe telesiphe* she found on an unidentified bilobed leaf species of subgenus *Plectostemma* (cf. *P. indecora*, also sect. *Pseudogranadilla*) in Prov. Napo, near Baeza at 1400 m alt., in Nov. 1992. The adult of *H. telesiphe* is mimicked by *Podotricha telesiphe* (Lepidoptera: Nymphalidae: Heliconiini), which, like *H. telesiphe*, has a yellow hindwing band in the north of its range, and a white hindwing band from 3°S southward (Vane-Wright et al., 1975).

It is clear that careful observation of natural history in the field can not only lead to new biological and behavioral data, but also to the discovery of new taxa. In our case, collaborative work has benefited both our specialities. Knowledge of tropical organisms can be greatly increased if botanists observe and record animal behavior on and around plants and if entomologists (and other zoologists) carefully collect vouchers, even if sterile, of plant specimens.

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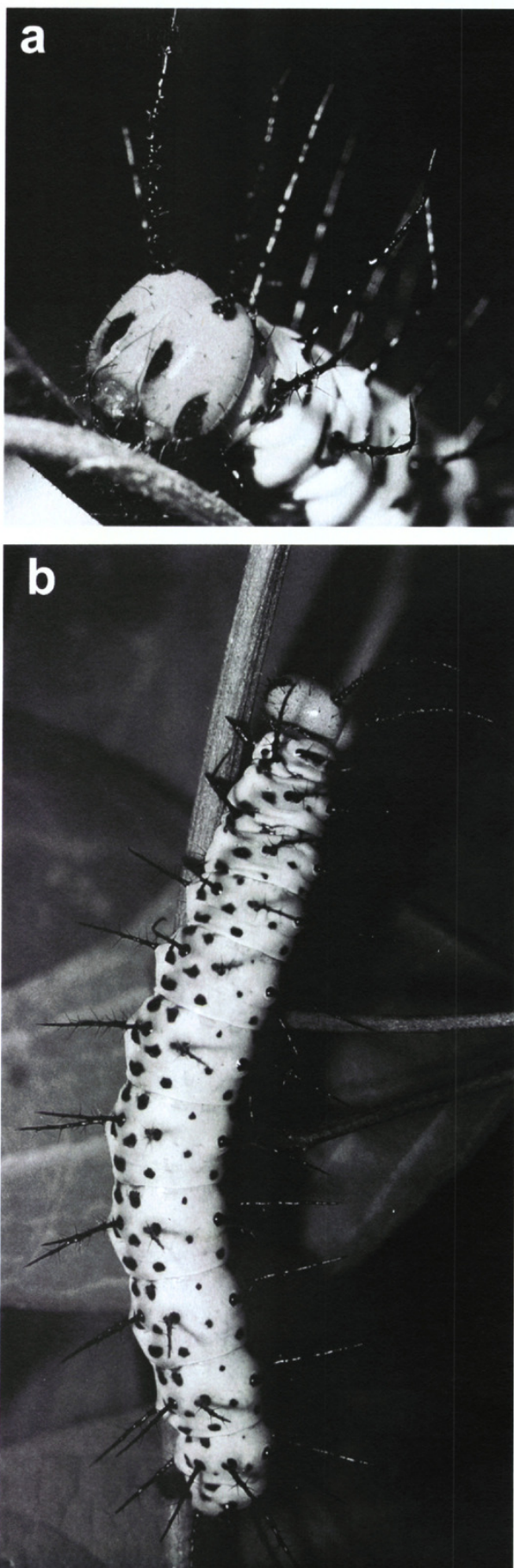


Figure 3. Larva of *Heliconius telesiphe*.—a. Detail of fifth instar larval head.—b. Fifth instar larva.

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