

## NEW HELICONIAS (HELICONIACEAE) FROM PANAMA

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ABSTRACT. Six new species of *Heliconia* with erect inflorescences from Panama are described, including *H. thomasiana*, *H. bella*, *H. lindsayana*, *H. lennartiana*, *H. lutea* and *H. barryana*.

Woodson and Schery (1945) in their treatment of the genus *Heliconia* in the Flora of Panama listed 11 species, many of which were misidentified or based on mixed collections. The recent surge in botanical collecting in Panama has increased the number of species from that country to over 40, with many new taxa described within the last ten years (Smith, 1975; Daniels & Stiles, 1979; Kress, 1981, 1984; Andersson, 1985). Additional new species will undoubtedly be added as collecting continues, especially in the more inaccessible areas on the Atlantic slopes. An annotated checklist with keys of the heliconias of Panama is currently in preparation.

The six new species of *Heliconia* from Panama treated here have been described from living collections in their natural habitats. Terminology follows that of Kress (1984) and readers are referred to that publication for additional information on morphology and distribution of *Heliconia*.

### *Heliconia thomasiana* Kress, sp. nov.

FIGURE 1.

Planta herbacea, habitu musoideo, 1-1.5 m alta; inflorescentia erecta; rachis rubra, glabra; cincinni bracteae spirales, basi rubrae, apice flavovirentes, glabrae; perianthium basi album, apice lutescens, glabrum, 7-7.5 cm longum.

TYPE. Panama, Panamá, Cerro Campana, in forested area near summit, elev. 1,150 m, 29 August 1980, *Kress 80-1251* (SEL, holotype; DUKE, isotype).

Herb with *Musa*-like habit, 1-1.5 m tall; leafy shoots in groups of 2 to 10; pseudostem green and maroon, glabrous, 25-35 cm tall, 1-2.5 cm in diameter; leaves 3 to 5 per shoot; longest petiole green with maroon spots, glabrous, 15-20 cm long, 4-5 mm in diameter; blade with base truncate, the apex acute, the upper surface green, glabrous, with midrib green and glabrous, the lower surface green, glabrous with midrib green to red and glabrous, the longest blade 35-50 cm long, 12-14 cm wide. Inflorescence erect, to 20 cm in height (excluding peduncle); peduncle green

and red, glabrous, 8-20 cm long, 4-6 mm in diameter; rachis flexuous, red, glabrous, 5-7 mm in diameter near basal bract; cincinnal bracts spirally arranged at maturity, 4 to 5 per inflorescence, oriented 50-60° to axis of inflorescence, the basal bract usually fertile, the middle bract with apex acuminate, the margins straight becoming involute near rachis, the inner surface yellow and glabrous, the outer surface red near rachis becoming yellow at apex, glabrous, 7-12 cm long, 4-5 cm wide at base, length/width = 2.1. Floral bracts translucent, persistent through fruiting, pale yellow green, glabrous, 5-5.5 cm long, 1.5-2 cm wide at base. Flowers 5 to 15 per cincinnus; pedicel pale yellow to white, glabrous, 3-5 mm long; perianth white basally becoming yellow to yellow green toward apex, glabrous, 7-7.5 cm long, 6-7 mm wide at base, at anthesis slightly curved 35-40°; free sepal revolute, fused sepals with apices not reflexed; staminode white, shallowly lobed with acuminate apex, 8-12 mm long, 2 mm wide, inserted 5-8 mm from base of corolla tube; stamens with anthers connivent inside apex of corolla tube; ovary white to pale yellow and glabrous, 5-6 mm long, 3-4 mm wide; style with stigma exserted 5 mm from perianth apex. Drupes blue, glabrous.

SPECIMENS EXAMINED. **Panama.** PANAMÁ: Cerro Campana, elev. 800 m, *Mori & Kallunki 3549* (MO); elev. 850-1,000, *Kress & Cooper-Smith 76-647* (DUKE); elev. 900 m, *Kress 83-1612* (DUKE). COCLÉ: El Valle de Antón, elev. 700 m, *Kress & Hammel 83-1585* (DUKE, SEL); vicinity of La Mesa, elev. 900 m, *Gentry 7410* (MO); *Luteyn & Kennedy 1720* (DUKE). VERAGUAS: Santa Fé, Pacific slope, elev. 1,300-1,350 m, *Croat 49061* (MO); Cerro Tute, elev. 750-1,000 m, *Mori, Bolten & Dressler 7544* (MO).

PHENOLOGY. Flowering mainly during the wet season from May to December.

HABITAT AND DISTRIBUTION. This species is found at elevations between 700 and 1,000 m in the understory of wet forests, often in light gaps or at forest margins; it is restricted to the mountains of central Panama.

RELATIONSHIPS. *Heliconia thomasiana* shares many characters with *H. irrasa* R. R. Smith, *H.*

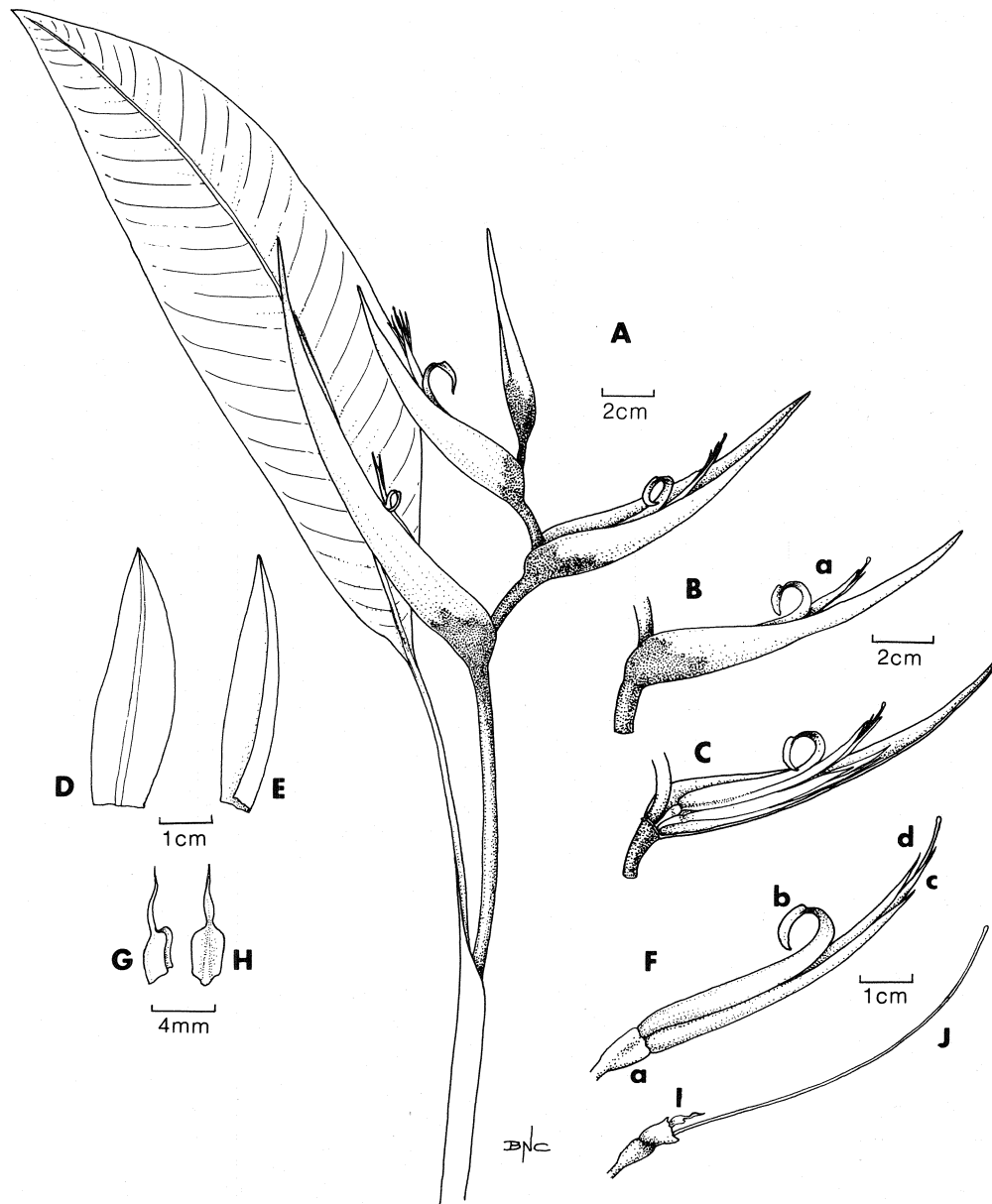


FIGURE 1. *Heliconia thomasiana*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, included in apex of corolla tube, and exserted stigma). G, H, I, staminodes: G, lateral view; H, abaxial view; I, inserted on corolla tube. J, style and stigma.

*tortuosa* Griggs and *H. lutea* Kress, but is distinctive in its smaller vegetative stature, entirely glabrous flowers with 7–7.5 cm long perianths, and narrow, glabrous cincinnal bracts colored red basally and yellow green distally.

NAME. The name was chosen to honor Dr. Thomas M. Antonio of the Chicago Botanic Garden who has collected many new Panamanian heliconias, but missed this one.

***Heliconia bella* Kress, sp. nov. FIGURE 2.**

Planta herbacea, habitu musoideo, 1–2 m alta; costa in pagina superiore folii vinosa, nervi subtus manifeste reticulati; inflorescentia erecta; rachis salmonea, glabra; cincinni bractee distichae, coccineae, glabrae; perianthium basi album, apice lutescens, glabrum, 3.2–3.5 cm longum.

TYPE. Panama, Veraguas, Cerro Tute above Santa Fé, in understory of primary forest, elev. 900–1,600 m, 27 April 1980, *Kress 80-1186* (SEL, holotype; DUKE, isotype).

Herb with *Musa*-like habit, 1–2 m tall; leafy shoots in groups of 2 to 5; pseudostem green, scurfy, 20–30 cm tall, 2–4 cm in diameter; leaves 3 to 4 per shoot; longest petiole green, glabrous to scurfy, 25–30 cm long, 1–1.3 cm in diameter; blade coriaceous, with base truncate to shortly attenuate, the apex acute, the upper surface dark green, glabrous, with midrib burgundy red and glabrous, the lower surface light green with prominent reticulate venation, glabrous with midrib yellow green and scurfy, the longest blade 70–80 cm long, 30–35 cm wide. Inflorescence erect, to 40 cm in height (excluding peduncle); peduncle pink, slightly puberulous, 3–4 cm long, 1.5–1.8 cm in diameter; rachis straight, pink with yellow, puberulous, 1.2–1.5 cm in diameter near basal bract; cincinnal bracts distichous, 8 to 18 per inflorescence, oriented 45–50° to axis of inflorescence, the basal bract often sterile, the middle bract with apex acuminate and reflexed, the margins basally involute and distally revolute, the inner surface red and puberulous, the outer surface scarlet and puberulous, 8–10 cm long, 6.8–7.2 cm wide at base, length/width = 1.3. Floral bracts opaque, decomposing before fruiting, pink and yellow, puberulous, 4–4.5 cm long, 2 cm wide at base. Flowers 10 to 15 per cincinnus; pedicel pale yellow, glabrous, 5 mm long; perianth white to pale yellow basally becoming yellow toward apex, glabrous, 3.2–3.5 cm long, 5–7 mm wide at base, at anthesis slightly curved 10–15°; free sepal reflexed, fused sepals with apices not reflexed; staminode white, shallowly cuspidate, 7 mm long, 3 mm wide, inserted 1.5 cm

from base of corolla tube; stamens with anthers connivent inside apex of corolla tube; ovary white to pale yellow and glabrous, 8–9 mm long, 4–5 mm wide. Drupes blue, glabrous, 1.3 cm long, 1.1 cm wide; stones 1 cm long, 6 mm wide.

SPECIMENS EXAMINED. **Panama.** COCLÉ: El Copé, above sawmill, elev. 1,000 m, *Kress 80-1177* (DUKE); elev. 850 m, *Kress & Hammel 83-1597* (DUKE). VERAGUAS: Santa Fé, W of Alto de Piedras, elev. 1,050–1,850 m, *Hammel 4619* (MO).

PHENOLOGY. Flowering during the latter part of the dry season and early rainy season in April and May; fruiting in August and September.

HABITAT AND DISTRIBUTION. This rare species is found in the understory of undisturbed forests often on steep slopes bordering wet ravines. So far it has only been collected at middle elevations from 850 to 1,900 m in Coclé and Veraguas, Panama.

RELATIONSHIPS. Although *Heliconia bella* shares some characters with other Central American species, such as the prominent reticulate venation on the underside of the leaf blades (*H. reticulata* (Griggs) Winkler), and the deep red midrib on the upperside of the leaf blade (*H. lennartiana* Kress, *H. stricta* Huber, and *H. wagneriana* Peters.), it possesses many features that set it apart. The fiery red, velvety cincinnal bracts with revolute apices and the short, yellow and white, nearly straight flowers distinguish this species from the rest.

NAME. The epithet *bella* was chosen for this species because of the exceptionally handsome shape and coloration of the inflorescences.

***Heliconia lindsayana* Kress, sp. nov. FIGURE 3.**

Planta herbacea, habitu musoideo, 1.8–2.5 m alta; folium pagina inferiore glaucum, costa et petiolus vinosus; inflorescentia erecta; rachis lutea, glabra; cincinni bractee spirales, roseae, glabrae; perianthium luteum, apice flavovirens, glabrum, 3.3–3.7 cm longum.

TYPE. Panama, Coclé, El Valle de Antón, at base of the hills beyond the city, elev. 800–900 m, 3 August 1976, *Kress & Cooper-Smith 76-650* (SEL, holotype; DUKE, isotype).

Herb with *Musa*-like habit, 1.8–2.5 m tall; leafy shoots in groups of 2 to 6; pseudostem green and dark red, glaucous, 60–90 cm tall, 2.5–3 cm in diameter; leaves 4 to 5 per shoot; longest petiole deep burgundy, glaucous, 70–90 cm long, 7–9 mm in diameter; blade with base truncate, the apex acuminate, the upper surface dark lustrous green, glabrous, with midrib light green to white

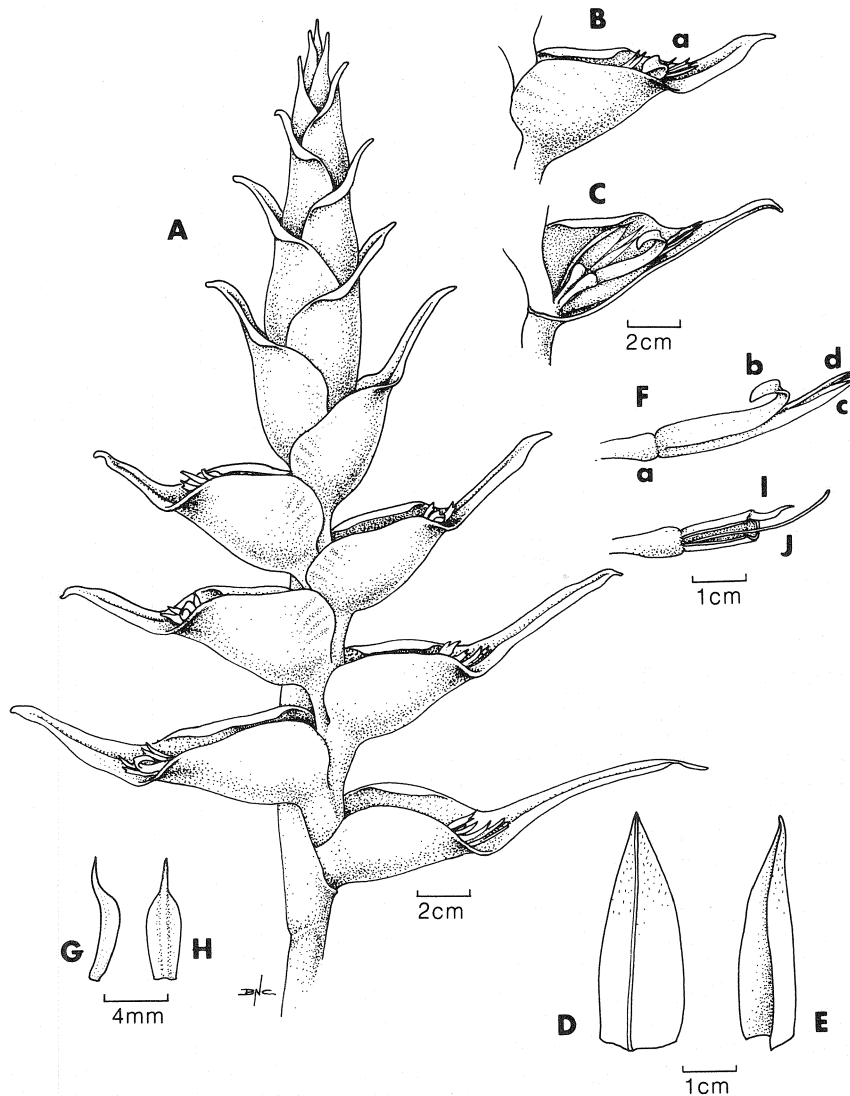


FIGURE 2. *Heliconia bella*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, included in apex of corolla tube). G, H, I, staminodes: G, lateral view; H, abaxial view; I, inserted on corolla tube. J, style and stigma.

and glabrous, the lower surface green, lightly to densely glaucous with midrib light green to burgundy and glabrous, the longest blade 70–85 cm long, 15–20 cm wide. Inflorescence erect, to 35 cm in height (excluding peduncle); peduncle deep burgundy, glabrous, 4–9 cm long, 8–10 mm in diameter; rachis flexuose, yellow with pink, glabrous, 8–10 mm in diameter near basal bract; cincinnal bracts spirally arranged, 7 to 10 per inflorescence, oriented 85–90° to axis of inflo-

rescence, the basal bract usually fertile, the middle bract with apex acuminate, the margins straight becoming involute near rachis, the inner surface yellow and glabrous, the outer surface bright pink, glabrous, 10–15 cm long, 5–6 cm wide at base, length/width = 2.3. Floral bracts translucent, decomposing after anthesis, white, glabrous, 3.3–3.7 cm long, 1.2–1.6 cm wide at base. Flowers 15 to 20 per cincinnus; pedicel white, glabrous, 5 mm long; perianth yellow to

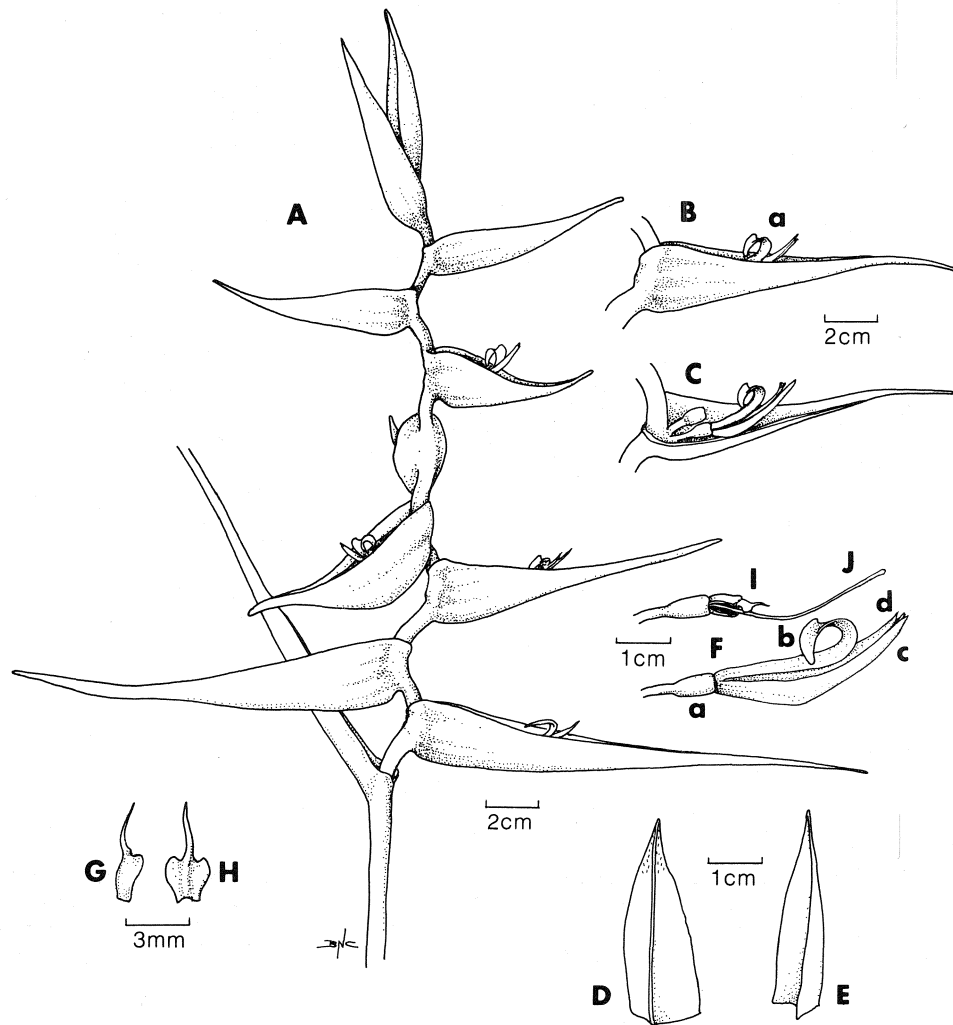


FIGURE 3. *Heliconia lindsayana*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, included in apex of corolla tube). G, H, I, staminodes: G, lateral view; H, abaxial view; I, inserted on corolla tube. J, style and stigma.

yellow green toward apex, glabrous, 3.3–3.7 cm long, 6–7 mm wide at base, at anthesis slightly curved 20–30°; free sepal yellow green with green margins, revolute, fused sepals with apices not reflexed; staminode white, trilobed with central tooth longer than rounded lateral lobes, apex dorsally geniculate, 5–6 mm long, 2–3 mm wide, inserted 6 mm from base of corolla tube; stamens with anthers connivent inside apex of corolla tube; ovary green and glabrous, 4 mm long, 3 mm wide. Drupes blue, glabrous.

SPECIMENS EXAMINED. **Panama.** BOCAS DEL TORO: Oleoducto road to Chiriquí Grande, elev. 1,500 m,

*Hammel 13712* (SEL). COCLÉ: El Valle de Antón, in mountain forest, *Bartlett & Lasser 16687* (DUKE); elev. 800 m, *Kress & Hammel 83-1587* (DUKE); La Mesa, *Luteyn & Kennedy 1710* (DUKE); elev. 850–900 m, *Luteyn 4086* (DUKE); Cerro Gaital, elev. 1,000–1,400 m, *Knapp, Mallet & Dressler 5986* (MO). **Cultivated.** NORTH CAROLINA: Durham, Duke University Botany Greenhouses, from rhizomes of *Kress & Cooper-Smith 76-650*, *Kress 83-1617* (DUKE).

PHENOLOGY. Flowering during the rainy season from June to September.

HABITAT AND DISTRIBUTION. This species has been found only in the mountains around El Valle

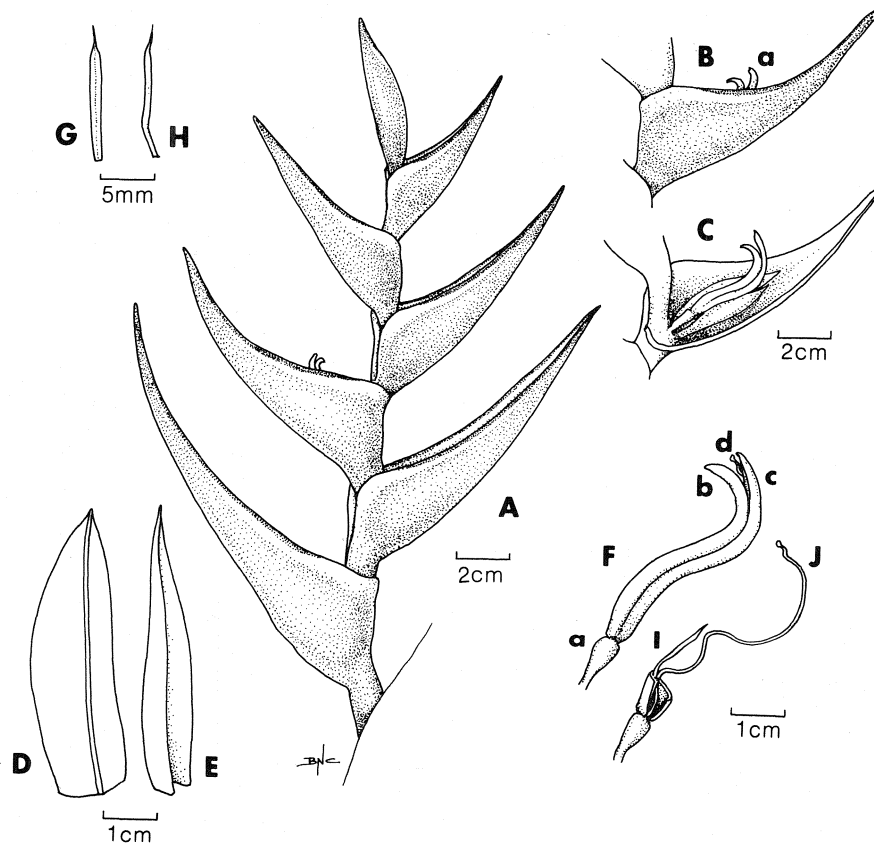


FIGURE 4. *Heliconia lennartiana*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, included in apex of corolla tube). G, H, I, staminodes: G, abaxial view; H, lateral view; I, inserted on corolla tube. J, style and stigma.

de Antón in Coclé, and above the Fortuna dam site in Bocas del Toro on the Atlantic slopes. It occurs in the understory of middle elevation cloud forests in light gaps and at woodland margins. Plants at higher elevational ranges possess more brightly pink inflorescences and more glaucous leaf blades.

RELATIONSHIPS. *Heliconia lindsayana* shares many characters with *H. sarapiquensis* Daniels & Stiles, but differs in its pink cincinnal bracts, burgundy petioles, and leaf blades that are lustrous green above with a distinctive white midrib and heavily glaucous below with a burgundy midrib. *Heliconia lindsayana* appears to hybridize with *H. latspatha*, another close relative, in the hills just above El Valle. Plants intermediate between these two species in stature and coloration have been found in this area (e.g., Kress &

Hammel 83-1579, DUKE; Kress & Hammel 83-1580, DUKE, SEL).

NAME. The epithet was chosen to honor my wife, Dr. Lindsay L. Clarkson, who is an enthusiastic field companion and has accompanied me on many collecting trips in Central America.

*Heliconia lennartiana* Kress, sp. nov.

FIGURE 4.

Planta herbacea, habitu musoideo, 2–3 m alta; costa in pagina superiore folii rubra; inflorescentia erecta; rachis cinnabarina, glabra; cincinnati bracteae distichae, rubrae, glabrae; perianthium glabrum, album, apice atrovirens, curvum (70–90°), 3.2–3.5 cm longum; staminodium linearis.

TYPE. Panama, Coclé, El Copé, above sawmill on steep hillsides at edge of primary forest, elev.

TABLE 1. Morphological comparison of *Heliconia lennartiana* with *H. bihai*, *H. stricta* and *H. wagneriana*.

Character	<i>H. lennartiana</i>	<i>H. bihai</i> *	<i>H. stricta</i> *	<i>H. wagneriana</i> *
Mature flowers per bract	1	1	1	3-4
Flower bud	obtuse, sepals equal	acute, sepals unequal	obtuse, sepals equal	obtuse, sepals equal
Perianth shape	slightly sigmoid	straight to sigmoid	straight to slightly curved	straight to parabolic
Perianth color	white with green apex	white with pale green apex	white at base and apex, green in between	white with green apex
Perianth length (cm)	5.6-5.9	5.1-7.0	5-7.5	5.3-7.4
Ventral sepals	glabrous to sparsely hirsute at apex	glabrous, rarely villous at apex	villous along margins	glabrous, sparsely pilose at base
Staminode insertion above base of corolla (mm)	8-10	10-23	1.5-5	4-7
Staminode shape	linear, apex acute	oblong to sublinear, convex to conduplicate	linear, apex acute	plane to keeled or conduplicate, triangular or linear
Staminode length (mm)	12-15	5-16	11-29	7-19
Staminode width (mm)	1-2	0.9-3.1	0.5-1.3	0.5-2.7

\* Data from Andersson (1981).

650 m, 25 August 1983, *Kress & Hammel 83-1593* (SEL, holotype).

Herb with *Musa*-like habit, 2-3 m tall; leafy shoots in groups of 3 to 5; pseudostem red and green, sometimes yellow, glabrous, 75-140 cm tall, 3-4.5 cm in diameter; leaves 3 or 4 per shoot; longest petiole green, glabrous, 70-85 cm long, 1.2-1.5 cm in diameter; blade with base shortly attenuate, the apex obtuse, the upper surface green, glabrous, with midrib deep maroon and glabrous, the lower surface green gray, glabrous with midrib yellow green and glabrous, the longest blade 1.25-1.6 m long, 25-31 cm wide. Inflorescence erect, to 40 cm in height (excluding peduncle); peduncle red, glabrous, 1-2 cm long, 2-2.2 cm in diameter; rachis straight, red orange to pink, glabrous, 1.5-1.9 cm in diameter near basal bract; cincinnal bracts distichous, 5 to 9 per inflorescence, oriented 40-50° to axis of inflorescence, the basal bract usually fertile, the middle bract with acuminate apex, the margins straight, the inner surface yellow to orange with a thin green border along the margin, glabrous, the outer surface red with a thin yellow and green border along the margin, glabrous, 11-14 cm long, 7-9 cm wide at base. Floral bracts translucent, persistent through fruiting, pale yellow to orange, glabrous, 5-5.5 cm long, 1.8-2.5 cm wide at base, length/width = 1.6. Flowers 10-20 per cincinnus; pedicel white, glabrous, 7-8 mm long; perianth white with dark green apex, essentially glabrous,

5.6-5.9 cm long, 8 mm wide at base, at anthesis curved 70-90°, slightly sigmoid; free sepal reflexed, fused sepals sparsely hirsute, apices not reflexed; staminode white, narrowly linear and slightly wider below the acute apex, 1.3-1.5 cm long, 1-2 mm wide, inserted 8-10 mm from base of corolla tube; stamens with anthers connivent inside apex of corolla tube; ovary white and glabrous, 5-7 mm long, 5 mm wide; style 7 cm long, plicate or folded inside corolla tube at anthesis. Drupes blue, glabrous.

**SPECIMENS EXAMINED.** **Panama.** COCLÉ: El Copé, Rivera Sawmill, Alto Calvario, elev. 700-850 m, *Folsom & Collins 6500* (DUKE, MO); elev. 925 m, *Kress 80-1175* (DUKE, SEL); elev. 1,300 m, *Kress & Hammel 82-1314, 82-1321* (DUKE); elev. 800 m, *Kress & Hammel 83-1590* (DUKE). VERAGUAS: Santa Fé, road to Calovebora, Atlantic slope, elev. 400 m, *Kress 80-1198* (DUKE); Pacific slope, *Mori & Kallunki 3901* (MO); Coquyito, junction of Río Barrera and Río Concepción, elev. 30-150 m, *Hammel 5231* (MO).

**PHENOLOGY.** Flowering during the rainy season from April to November.

**HABITAT AND DISTRIBUTION.** This species is found primarily in middle elevation cloud forests in Coclé and Veraguas, Panama. It grows in small clumps in light gaps and at the margins of primary forest.

**RELATIONSHIPS.** *Heliconia lennartiana*, included in sect. *Heliconia*, is most closely related to

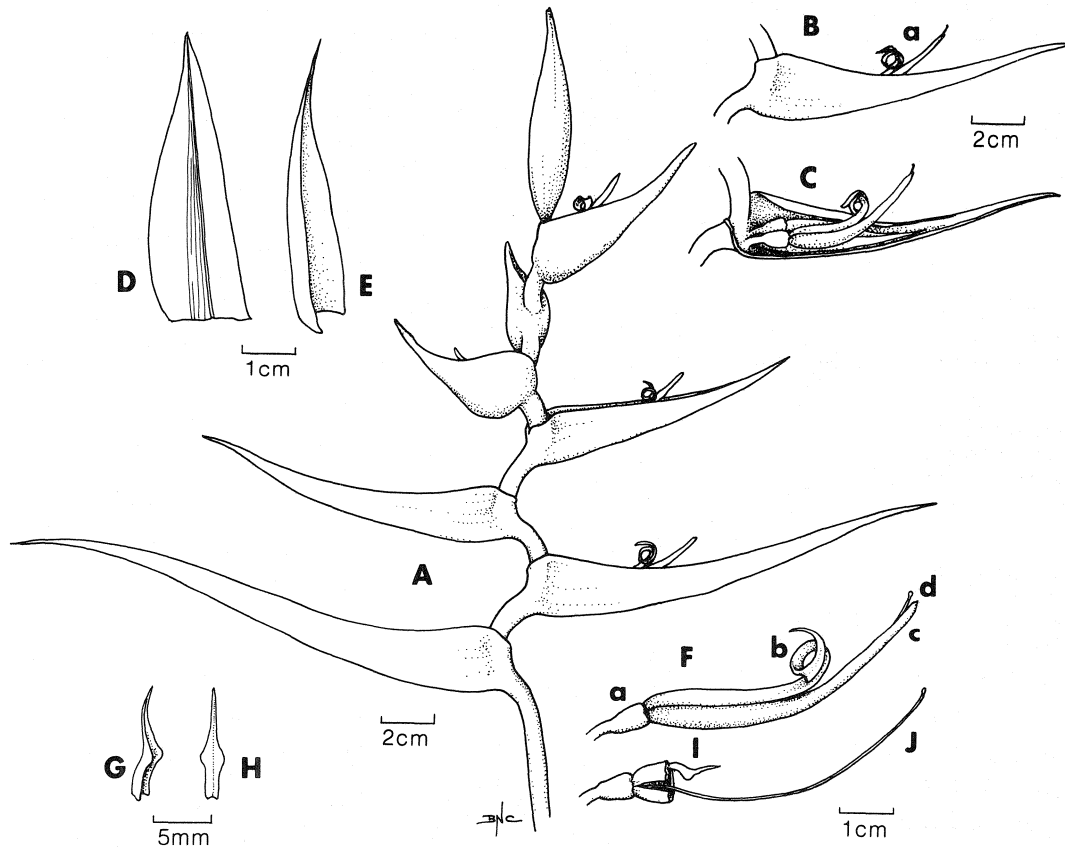


FIGURE 5. *Heliconia lutea*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, included in apex of corolla tube, and exerted stigma). G, H, I, staminodes: G, lateral view; H, abaxial view; I, inserted on corolla tube. J, style and stigma.

*H. wagneriana*, *H. stricta*, and *H. bihai* L. According to Andersson (1981), who professes a broad species concept, these species are distinguished from each other by the shape of the floral buds, the relationship of the sepals in the buds, the presence or absence of hairs on the ventral sepals, the perianth color and shape at anthesis, the shape and point of insertion of the staminode on the corolla tube, and the number of mature flowers open per cincinnal bract. *Heliconia lennartiana* shares some character states with each of these species (TABLE 1). The dark green perianth apex allies it to *H. wagneriana*; the linear staminode and single mature flower per cincinnal bract ally it to *H. stricta*; the sigmoidal shape of the flower and the glabrous to sparsely villous ventral sepals ally it to *H. bihai*. The insertion of the staminode 8–10 mm from the base of the corolla and the exceptional curvature of the perianth (up to 90°) distinguish this species from all the others.

NAME. This species is named to honor Dr. Lennart Andersson of the University of Göteborg, Sweden, who has contributed much to our current understanding of the taxonomy of the genus *Heliconia*.

*Heliconia lutea* Kress, sp. nov. FIGURE 5.

Planta herbacea, habitu musoideo, 1–3 m alta; inflorescentia erecta; rachis lutea, glabra; cincinni bractee spirales, luteae, glabrae; perianthium basi album, apice viridescens, glabrum, 6.6–7 cm longum.

TYPE. Panama, Panamá, El Llano–Cartí Road, along road bank at edge of forest in understory, elev. 330 m, 20 August 1983, Kress & Hammel 83-1561 (SEL, holotype).

Herb with *Musa*-like habit, 1–3 m tall; leafy shoots in groups of 3 to 10; pseudostem green and red, glabrous, 45–100 cm tall, 2–4.5 cm in



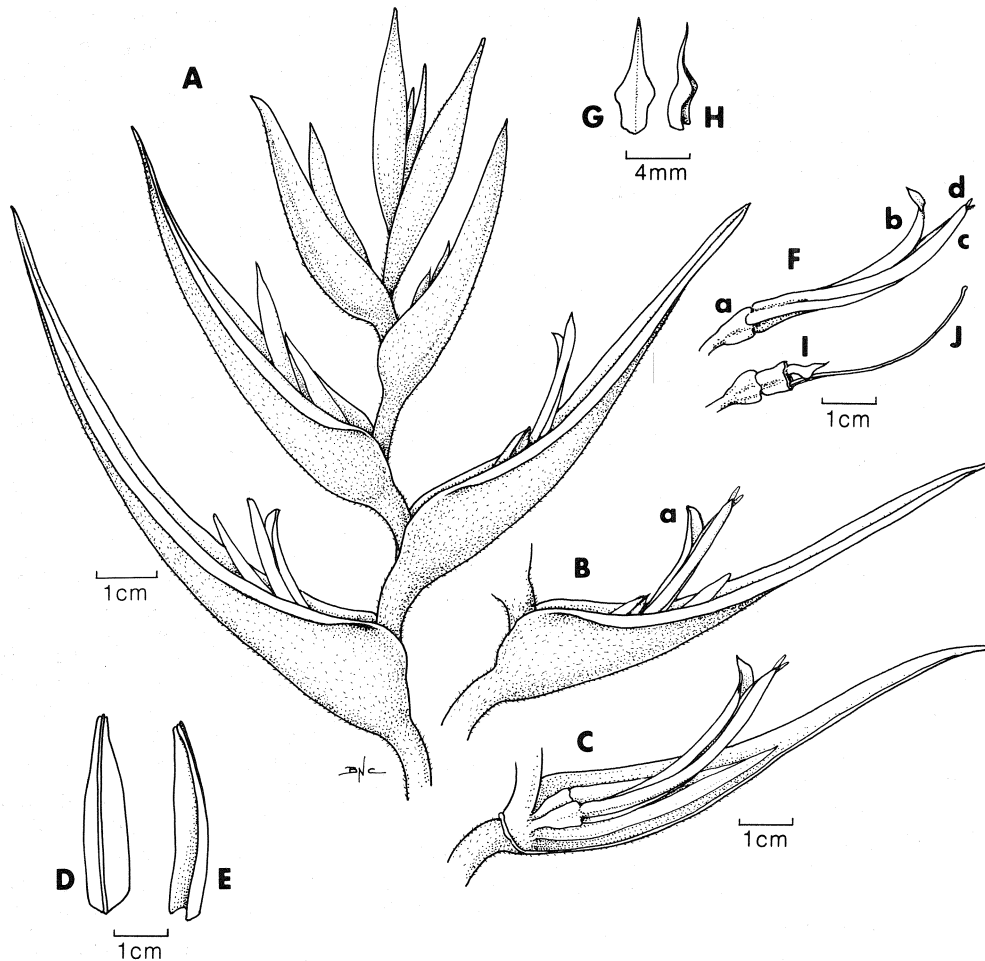


FIGURE 6. *Heliconia barryana*. A, inflorescence. B, C, cincinnal bracts: B, entire (Ba, flower protruding at anthesis); C, cut-away, floral bracts removed showing flower at anthesis. D, E, floral bracts: D, abaxial view; E, lateral view. F, flower at anthesis, entire (Fa, ovary; Fb, free sepal; Fc, fused sepals; Fd, anthers, slightly exerted from corolla tube). G, H, I, staminodes: G, abaxial view; H, lateral view; I, inserted on corolla tube. J, style and stigma.

diameter; leaves 3 to 6 per shoot; longest petiole green and red, glabrous, 35–70 cm long, 6–10 mm in diameter; blade with base truncate to shortly attenuate, the apex acute, the upper surface green with a thin red margin, glabrous, with midrib green and glabrous, the lower surface green, glabrous with midrib red and glabrous, the longest blade 70–115 cm long, 18–26 cm wide. Inflorescence erect, to 35 cm in height (excluding peduncle); peduncle green and red, glabrous, 3–15 cm long, 8–12 mm in diameter; rachis flexuous, yellow green, glabrous, 8–13 mm in diameter near basal bract; cincinnal bracts subdistichous to spirally arranged at maturity, 7–9 per inflorescence, oriented 70–80° to axis of inflorescence, the basal bract usually fertile, the

middle bract with acuminate apex, the margins involute, the inner surface yellow to yellow orange and glabrous, the outer surface yellow to green along keel, glabrous, 13–15 cm long, 6–8 cm wide at base, length/width = 2.0. Floral bracts translucent (to opaque), persistent through fruiting, yellow, glabrous, 4–5.5 cm long, 2–2.5 cm wide at base. Flowers 10 to 15 per cincinnus; pedicel white, glabrous, 4–6 mm long; perianth white basally becoming green toward apex, glabrous, 6.6–7 cm long, 6–8 mm wide at base, at anthesis curved 40–50°; free sepal revolute, fused sepals with apices not reflexed; staminode white, shallowly lobed with acuminate apex, 1–1.2 cm long, 2–3 mm wide, inserted 5–6 mm from base of corolla tube; stamens with anthers connivent

inside apex of corolla tube; ovary white to pale yellow and glabrous, 4–6 mm long, 4 mm wide; style with stigma exerted 5 mm from perianth apex. Drupes blue, glabrous.

**SPECIMENS EXAMINED.** Panama. PANAMÁ: El Llano-Cartí Road, elev. 500 m, *Kress 80-1234* (DUKE, SEL); elev. 330 m, *Kress & Hammel 83-1562* (DUKE), *Kress & Hammel 83-1563* (DUKE, SEL); Cerro Jefe, elev. 650 m, *Kress & Hammel 83-1574* (DUKE, SEL).

**PHENOLOGY.** Flowering mainly during the middle of the rainy season from July to September.

**HABITAT AND DISTRIBUTION.** This species is found at middle elevations between 300 and 700 m in light gaps, along small streams, and at the margins of primary forest; it is restricted to the mountains of the Provincia de Panamá.

**RELATIONSHIPS.** *Heliconia lutea* shares many characters with *H. irrasa*, *H. tortuosa* and *H. thomasi*. The bright yellow, glabrous cincinnal bracts with long acuminate apices, and the long, glabrous, white to green perianths distinguish this species from the others.

**NAME.** The epithet of this species refers to the striking golden yellow cincinnal bracts.

***Heliconia barryana* Kress, sp. nov. FIGURE 6.**

Planta herbacea, habitu musoideo, 2 m alta; inflorescentia erecta; rachis rubra; cincinni bracteae subdistichae, aequae curvatae, rubrae, pubescentes; perianthium ad basin tortum, viridiflavum, glabrum, 7–7.5 cm longum.

**TYPE.** Panama, Chiriquí, La Fortuna Hydroelectric Project, near Quebrada de Arena, elev. 1,100 m, 12 March 1982, *Kress & Hammel 82-1348* (SEL, holotype; DUKE, isotype).

Herb with *Musa*-like habit, 2 m tall; leafy shoots in groups of 4; pseudostem green, glabrous, 75 cm tall, 1.2 cm in diameter; leaves 5 per shoot; longest petiole green, glabrous, 38 cm long, 1.2 cm in diameter; blade with base shortly truncate, the apex acute, the upper surface green, glabrous, with midrib light green and glabrous, the lower surface green, glabrous with midrib yellow green and red and glabrous, the longest blade 1 m long, 37 cm wide. Inflorescence erect, to 17 cm in height (excluding peduncle); peduncle red, glabrous to puberulous near basal bract, 9 cm long, 1 cm in diameter; rachis straight, red, pubescent, 9 mm in diameter near basal bract; cincinnal bracts subdistichous, 7 per inflorescence, oriented 30–40° to axis of inflorescence, uniformly curved, the basal bract usually fertile, the middle bract with acuminate apex, the margins revolute, the inner surface red and glabrous,

the outer surface red, sparsely pubescent, 10.5 cm long, 4 cm wide at base, length/width = 2.6. Floral bracts translucent, persistent through fruiting, yellow green, glabrous to puberulous along keel, 3 cm long, 1.5 cm wide at base. Flowers 10 per cincinnus; semi-resupinate by twisting of the perianth and not the pedicel; pedicel yellow, glabrous, 8 mm long; perianth yellow to yellow green, glabrous, 5 cm long, 8 mm wide at base, at anthesis slightly curved 10–20°; free sepal partially reflexed, fused sepals with apices not reflexed; staminode yellow, trilobed with center tooth longer than rounded lateral shoulders, 7 mm long, 4 mm wide, inserted 6 mm from base of corolla tube; stamens with anthers flared outside perianth apex; ovary green and glabrous, 6 mm long, 5 mm wide. Drupes blue, glabrous.

**PHENOLOGY.** Flowering during the late dry season in March.

**HABITAT AND DISTRIBUTION.** This species is known only from the type specimen collected at 1,100 m in the Fortuna Forest Reserve and Hydroelectric Project in Chiriquí, Panama. The specimen was growing in a light gap in the understory of primary wet forest on a steep hillside. More collecting in this area of Chiriquí is needed to better document the morphological boundaries and geographic distribution of this species.

**RELATIONSHIPS.** The uniformly curved cincinnal bracts, partially twisted perianth and trilobed staminode suggest that *H. barryana* is closely related to *H. lankesteri* Standley and *H. ignescens* Daniels & Stiles in Central America.

**NAME.** *Heliconia barryana* is named to honor Dr. Barry E. Hammel of the Missouri Botanical Garden who has collected many heliconias in Panama and Costa Rica. The author feels privileged to have had the opportunity to spend many days in the field with Dr. Hammel, including the day in which this species was discovered.

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