



Original Papers

Flora of Ceará, Brazil: Heliconiaceae

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Abstract

We present here a floristic study of the family Heliconiaceae in Ceará state, Northeast of Brazil, as part of the “Flora of Ceará: from knowledge to Conservation” project. The study was carried out based on morphological analysis of samples obtained in the field from August/2022 to June/2023, from specimens deposited in herbaria EAC, HCDAL, HUEFS, HVASF, IPA, PEUFR, R and RB herbaria, of images from type collections in the K, MO, NY and S herbaria and consultation of specialized bibliographies. In Ceará, Heliconiaceae is represented by four species: *Heliconia episcopalis*, *H. pendula*, *H. psittacorum* and *H. spathocircinata*. Most species occur in Seasonal Semideciduous Forest and Dense Ombrophilous Forest, mainly on the tops of the humid mountain ranges of Baturité, Maranguape and Pacatuba. *Heliconia psittacorum* has a wide distribution, also occurring in the Vegetation Complex of the Coastal Zone. The species were recorded in three Conservation Units in the state: Chapada of Araripe Environmental Protection Area, Ceará Botanical State Park and Ubajara National Park. We present an identification key, morphological descriptions, comments about the distribution, ecology, flowering and fruiting period, uses, maps and illustrations of the species.

Key words: diversity, floristic, *Heliconia*, Northeast of Brazil.

Resumo

Apresentamos aqui o estudo florístico da família Heliconiaceae no estado do Ceará, nordeste do Brasil, como parte do projeto “Flora do Ceará: conhecer para conservar”. O estudo foi realizado a partir de análise morfológica de amostras obtidas em campo no período de agosto/2022 a junho/2023, de espécimes depositados nos herbários EAC, HCDAL, HUEFS, HVASF, IPA, PEUFR, R e RB, de imagens de coleções tipo dos herbários K, MO, NY e S e de consulta a bibliografias especializadas. No Ceará, Heliconiaceae está representada por quatro espécies: *Heliconia episcopalis*, *H. pendula*, *H. psittacorum* e *H. spathocircinata*. A maioria das espécies ocorre na Floresta Estacional Semidecídua e Floresta Ombrófila Densa, principalmente nos topos das serras úmidas de Baturité, Maranguape e Pacatuba. *Heliconia psittacorum* tem ampla distribuição, ocorrendo também no Complexo Vegetacional da Zona Litorânea (Mata de Tabuleiro). As espécies foram registradas em três Unidades de Conservação no estado: Área de Proteção Ambiental da Chapada do Araripe, Parque Estadual Botânico do Ceará e Parque Nacional de Ubajara. Apresentamos chave de identificação, descrições morfológicas, comentários sobre distribuição, ecologia, período de floração e frutificação, usos, mapas e ilustrações das espécies.

Palavras-chave: diversidade, florística, *Heliconia*, nordeste do Brasil.

Introduction

Heliconiaceae comprises only the genus *Heliconia* L. with approximately 250 species of predominantly neotropical distribution, with a

small paleotropical group and records in some islands of the South Pacific (Andersson 1998; Castro *et al.* 2007). In Brazil, there are 28 species, four of which are endemic, with records in all

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regions and phytogeographical domains (Braga 2024). In Brazilian territory, two areas of richness of *Heliconia* are recognized: the Amazon basin and the Atlantic Coastal Forest (Kress 1990). The genus is represented by herbaceous, perennial and rhizomatous plants with distichous leaves, open leaf sheath; cymose inflorescence subtended by a navicular and showy bract, terminal, erect or pendant; showy, bisexual, dichlamydeous zygomorphic, trimerous flowers; ovary inferior, trilocular, uniovulate; nuculanum type drupaceous fruits with 1–3 pyrenes (Castro 1995; Andersson 1998; Braga 2023).

Heliconia was initially included in the Musaceae family. However, considering a set of characteristics such as distichous leaves, 1 bracteole per flower, calyx and corolla united in a single tube, uniovulate loculus and drupaceous fruits of the nuculanum type, it was recognized within the family Heliconiaceae (Nakai 1941; Dahlgren *et al.* 1985; Cronquist 1988). This family is currently positioned in Zingiberales along with Cannaceae, Costaceae, Lowiaceae, Marantaceae, Musaceae, Strelitziaceae and Zingiberaceae (Stevens 2001, continuously updated; APG IV 2016).

Due to characteristics that make these species attractive to commerce, such as beauty, exoticism, different colors and shapes, resistance to transport and post-harvest durability, representatives of *Heliconia* have become widely spread in tropical gardens and flowers arrangements worldwide (Castro 1995). Some species are widely cultivated in Brazil, especially in the Northeast region (Loges *et al.* 2005; Torres *et al.* 2005) and, although little explored, some species provide good quality textile fibers (Sampaio *et al.* 2005).

In Brazil, the genus has been the subject of taxonomic or floristic studies in the states of Bahia (Mascarenhas 2016), Amazonas, Reserva Ducke, in Manaus (Maas & Maas 2005), Acre (Daly & Silveira 2008), Pernambuco, Usina São José, Igarassu (Luna *et al.* 2016), Alagoas (Lemos *et al.* 2010), and Pará, in the metropolitan region of Belém (Cardoso *et al.* 2018). In the state of Ceará, its representatives were cited only in floristic surveys carried out in Ubajara National Park (Silveira *et al.* 2020a), Serra de Baturité (Silveira *et al.* 2020b), and in the inventory of Angiosperms species in Ceará territory (Loiola *et al.* 2020). However, so far, no floristic-taxonomic study on *Heliconia* has been carried out in Ceará state and there is only incipient knowledge about the representatives of this taxon in the flora of this state.

As part of the project “Flora do Ceará: from Knowledge to Conservation”, the present study aimed to inventory the species of Heliconiaceae and to learn about their geographic distribution in the territory of Ceará, aiming to provide useful information for the recognition of the species.

Material and Methods

The study was carried out through comparative morphological analysis of specimens obtained in the field from August 2022 to June 2023, from collections deposited in national herbaria, namely EAC, HCDAL, HUEFS, HVASF, IPA, PEUFR, R and RB, and online images of type collections from the herbaria K, MO, NY and S, acronyms according to Thiers (continuously updated). Species information was complemented by consulting the Global Plants platforms (JSTOR 2022, *speciesLink* (CRIA 2022), Reflora Virtual Herbarium (REFLORA 2022).

The identifications were carried out with the help of specialized bibliographies (Berry & Kress 1991; Andersson 1998). The terminology of vegetative structures followed Radford *et al.* (1974) and the reproductive terminology followed Harris & Harris (2001). Species occurrence data, vernacular name and flowering and fruiting periods were obtained from the labels of consulted specimens and/or from field observations.

The species distribution map was prepared in QGIS (2023), version 2.18.28. The distribution of the species in the vegetation types was standardized according to Figueiredo (1997) and the Technical Manual of Brazilian Vegetation (IBGE 2012): Vegetation Complex of the Coastal Zone (Mata de Tabuleiro), Seasonal Semideciduous Forest, Dense Ombrophilous Forest (Humid Forest).

Results and Discussion

In Ceará, four species of *Heliconia* were recorded: *H. episcopalis* Vell., *H. pendula* Wawra, *H. psittacorum* L.f. and *H. spathocircinata* Aristeg, occurring preferentially in mountainous areas in Dense Ombrophilous Forest, followed by the Seasonal Deciduous and Vegetation Complex of the Coastal Zone (Mata de Tabuleiro) (Fig. 1). *Heliconia psittacorum* showed the widest distribution, recorded in thirteen municipalities and in the three vegetation types mentioned above. *Heliconia episcopalis* and *H. spathocircinata* had a more restricted distribution, occurring in only two and three mountain towns, respectively, in the Dense Ombrophilous Forest.

Only two species were recorded in Conservation Units: Chapada of Araripe Environmental Protection Area (*H. psittacorum*), Ceará Botanical State Park (*H. psittacorum*) and Ubajara National Park (*H. psittacorum* and *H. spathocircinata*).

Taxonomic treatment

Heliconiaceae Nakai, J. Jap. Bot. 17: 201. 1941.

Herbs perennial, rhizomatous, musoid, ranging from 0.5–4.5 m in height. Leaves alternate, simple, distichous, glabrous, with sheaths juxtaposed in pseudostem; prominent

midrib. Cincinnal tyrsoïd inflorescence, terminal, erect or pendant; colorful bracts, cymbiform or conduplicate, distichous or spiral, erect, suberect or patent, with apex straight or circinate, glabrous to pubescent, persistent or deciduous, lax or congested. Flowers zygomorphic, resupinate or not, sepals and petals adnate at the base to the androecium forming a tube; 5 fertile stamens, anthers with 2 fertile teaks, 1 staminode; perianth partially or fully exposed; inferior ovary, obovoid, trilocular, uniovulate locule. Nuculanium type drupaceous fruits with 1–3 pyrenes, usually dark blue or purple when mature.

Identification key for *Heliconia* species occurring in Ceará state

1. Inflorescence pendant; bracteole lacerated in fruiting 2. *Heliconia pendula*
- 1'. Inflorescence erect; bracteole entire in fruiting.
 2. Bracts congested, deciduous; peduncle with scars..... 1. *Heliconia episcopalis*
 - 2'. Bracts lax, persistent; peduncle without scars.
 3. Bracts with straight apex; perianth fully exposed 3. *Heliconia psittacorum*
 - 3'. Bracts with circinnate apex; perianth partially exposed 4. *Heliconia spathocircinata*

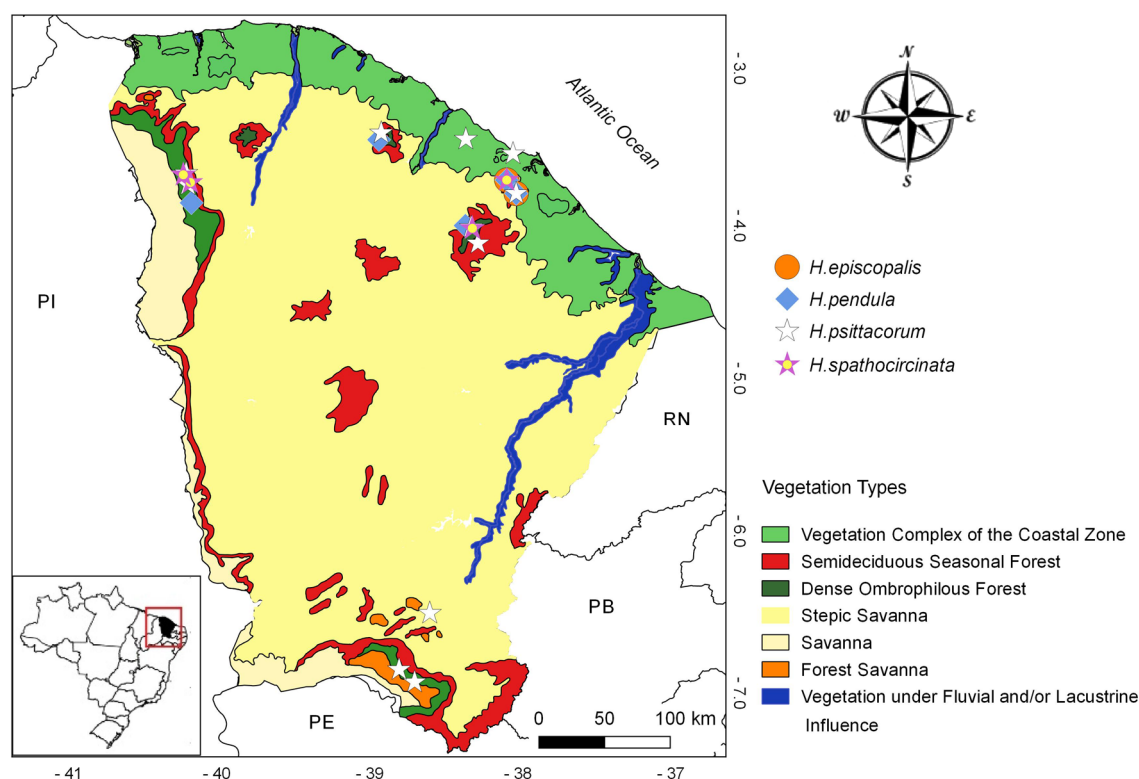


Figure 1 – Geographic distribution of the Heliconiaceae species occurring in the state of Ceará.

1. *Heliconia episcopalís* Vell. Fl. Flumin. 107 (1829). Figs. 1; 2a-i

Herb, 1.5–4 m high. Petiole 27–73 cm long. Leaf blade 36–128 × 4.6–12.6 cm, elliptical to oblong, base asymmetric to attenuate, apex acute to acuminate, margin entire. Inflorescence terminal, erect; peduncle 15–29 cm long, with scar; rachis 12–15 cm, erect, glabrous, fully covered by bracts. Bracts 5–6 × 1–1.5 cm, distichous, congested, cymbiform, pubescent to glabrescent, deciduous, apex straight, 11–20 per inflorescence, orange with yellow tips. Bracteole 3.9–4.5 × 0.8–0.9 cm, oblong to lanceolate, apex acute, white to yellowish, entire in fruiting. Flowers non-resupinate 1–3 per bract; perianth partially exposed, whitish; dorsal sepals 4.2–5 × 1 cm, lanceolate, apex acute, straight or slightly curved; ventral sepals 4.5–5 × 0.1 cm, lanceolate, apex acute; petals 4.4–5 × 0.5 cm, oblong, apex acute, white; fertile stamens 3–4.7 cm; staminode 1–1.5 × 0.1 cm, linear, apex acuminate; style ca. 5 cm; ovary 0.4–0.5 cm, obovoid, trilobular. Drupe 0.6–1.3 × 0.6 cm.

Examined material: Maranguape, Sítio Boa Vista, 03°53'27"S, 38°41'08"W, 10.VII.2003, fl., *L.W. Lima-Verde et al.* 2537 (EAC, R). Pacatuba, Sítio do Prof. Miguel, trilha Pedra do Letreiro, 03°59'03"S, 38°37'13"W, 25.II.2003, fl., *L.W. Lima-Verde & I.M. Andrade* 2446 (EAC, R); Sítio, Serra da Aratanha, 03°59'03"S, 38°37'13"W, 4.IV.2000, fl., *L.W. Lima-Verde* 1231 (EAC, R); Sítio, Serra da Aratanha, 03°59'03"S, 38°37'13"W, 4.IV.2000, fl., *L.W. Lima-Verde* 1232 (EAC); Serra da Aratanha, no caminho para a cachoeira dos destroços, 12.VII.2017, fl., *N.K. Luna et al.* 429 (R); Sítio Pitaguari, encosta alta da Serra de Pacatuba, sombra da mata, 16.II.1968, fl., *Andrade-Lima* 68-5260 (IPA).

Additional material examined: BOLÍVIA. PROV. SARA: Depart. Santa Cruz, Rio Surutu, 28.III.1926, fl., *J. Steinbach* 7522 (S). BRASIL. PERNAMBUCO: Goiana, mata da Usina Santa Tereza, 23.V.1977, fl., *I. Pontual* 1384 (PEUFR). Igarassu, Usina São José, 19.VIII.2004, fl., *T. Kimmel* 102 (IPA). BAHIA: Caravelas, Rio do Largo-Tucunzeiro, 17°45'00"S, 39°17'46"W, 25.VIII.2011, fl. and fr., *E.N. Matos* 422 (HUEFS).

Heliconia episcopalís is characterized by inflorescence erect, bracteole entire in fruiting, bracts distichous, congested, orange with yellow tips, and deciduous, and peduncle with scar.

This species was recorded in Peru, Colombia, Ecuador, Venezuela, Bolivia, Suriname, Brazil and Guyanas (Santos 1978; Govaerts & Kress 2023). In Brazil, it occurs in the Mid-West, Northeast, North and Southeast in Amazonia, Caatinga and Atlantic Forest domains (Braga 2024). In Ceará, it occurs only in the municipality of Maranguape and Pacatuba in Dense Ombrophilous Forest (Fig. 1).

Heliconia episcopalís was collected with flowers in February, April and July.

The species is cultivated in gardens and also sold as cut flowers (Castro *et al.* 2011).

There is no vernacular name registered for this species.

2. *Heliconia pendula* Wawra, Oesterr. Bot. Z., 13: 8-9 (1863). Figs. 1; 3a-j

Herb, 2.5–4.5 m high. Petiole 28–42 cm long. Leaf blade 51–83 × 13.3–23 cm, oblong to lanceolate, base asymmetric to attenuate, apex acuminate to attenuate, margin entire. Inflorescence terminal, pending; peduncle 13.5–43 cm long, without scar; rachis 19–33 cm, sinuate, pubescent. Bracts 7–20 × 2–2.3 cm, spiral, lax, cymbiform, pubescent, persistent, apex erect, 5–8 per inflorescence, red. Bracteole 2.9–4 × 0.3–0.8 cm, ovate to deltoid, apex acute, white, lacerated in fruiting. Flowers not-resupinate 5–9 per bract; perianth partially exposed, whitish; dorsal sepals 3.4–4.7 × 0.5–0.8 cm, lanceolate, apex acute, straight or slightly curved; ventral sepals 3.4–4 × 0.1–0.3 cm, lanceolate, apex acute; petals 3.4–4.3 × 0.3–0.6 cm, oblong, apex acute, white; fertile stamens 2.9–3.8 cm; staminode 1.1–1.3 × 0.1–0.2 cm, elliptical, apex acuminate; style 3–4.2 cm; ovary 0.3–0.5 cm, obovoid, trilobular. Drupe 1.1–1.3 × 0.6 cm.

Examined material: Guaramiranga, Sítio Lagoa, 04°12'21"S, 38°58'16"W, 21.IX.2004, fl., *V. Gomes & A. Xavier* 2109-18 (EAC); Sítio Cana Brava, 9.VIII.1983, fl., *L.W. Lima-Verde* 15 (EAC). Maranguape, Sítio Boa Vista, Barlavento da Serra de Maranguape, 03°53'27"S, 38°41'08"W, 10.VII.2003, fl., *L.W. Lima-Verde et al.* 2536 (EAC). Pacatuba, Mosteiro, 03°59'03"S, 38°37'13"W, 2.I.1996, fl. and fr., *L.W. Lima-Verde* (EAC 23876); Sítio Pitaguari, Serra da Aratanha, 2.X.1979, fl., *A.J. Castro & P. Martins* (EAC 66711). São Benedito, Penha, Serra da Ibiapaba, 04°02'55"S, 40°51'54"W, 7.I.1942, fl., *P. Bezerra* (EAC 486). Uruburetama, Retiro, 03°36'43"S, 39°34'08"W, 8.I.1991, fl., *L.P. Felix & D.D. Pereira* 6467 (RB).

Additional material examined: BRAZIL. PERNAMBUCO: Junqueira, Usina Colônia, Mata da Serra do Quengo, 08°42'37"S, 35°50'01"W, 24.V.1999, fl., *J.A. Siqueira Filho & C.B. Neves* 914 (HVASF). Saloá, RPPN Fazenda Brejo, 09°00'28"S, 36°47'02"W, 9.VI.2003, fl. and fr., *J.A. Siqueira Filho* 1330 (HVASF). VENEZUELA. ESTADO SUCRE: Peninsula de Paria, Cerro de Humo: laderas que miran al sur, entre la Laguna y Roma, noroeste de Irapa, 5.III.1966, fl., *J.A. Steyermark* 95097 (K).

Heliconia pendula is similar to *H. spathocircinata*, sharing sinuate rachis and red bracts. However, *H. pendula* clearly differs from

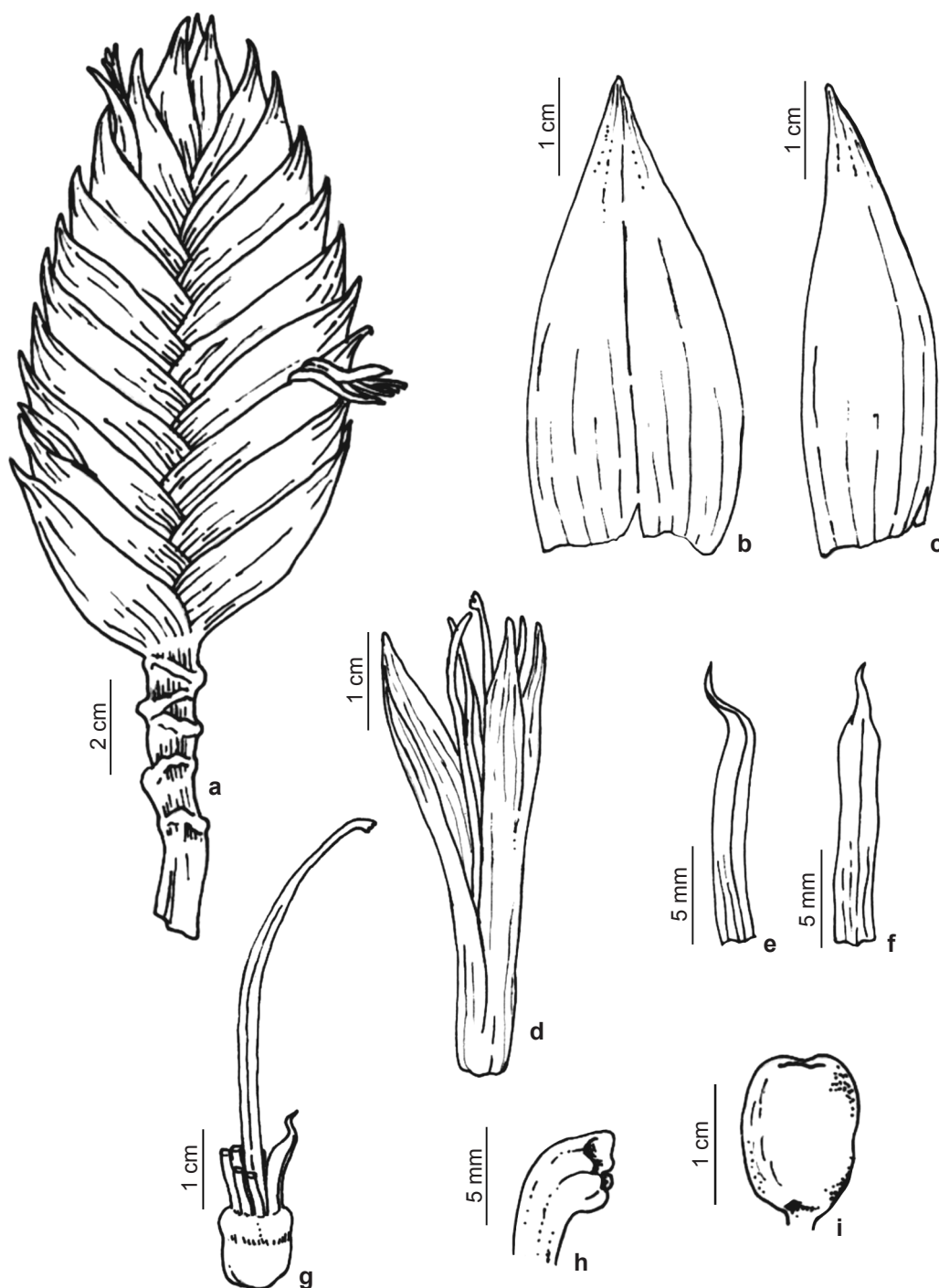


Figure 2 – a-i. *Heliconia episcopalis* – a. erect inflorescence; b. bottom view of bract; c. side view of bract; d. perianth; e. side view of staminode; f. bottom view of staminode; g. open flower highlighting the style and staminode; h. enlargement of stigma; i. drupe. (a. Lima-Verde 1232; b-h. Lima-Verde & Andrade 2446; i. Matos 422).

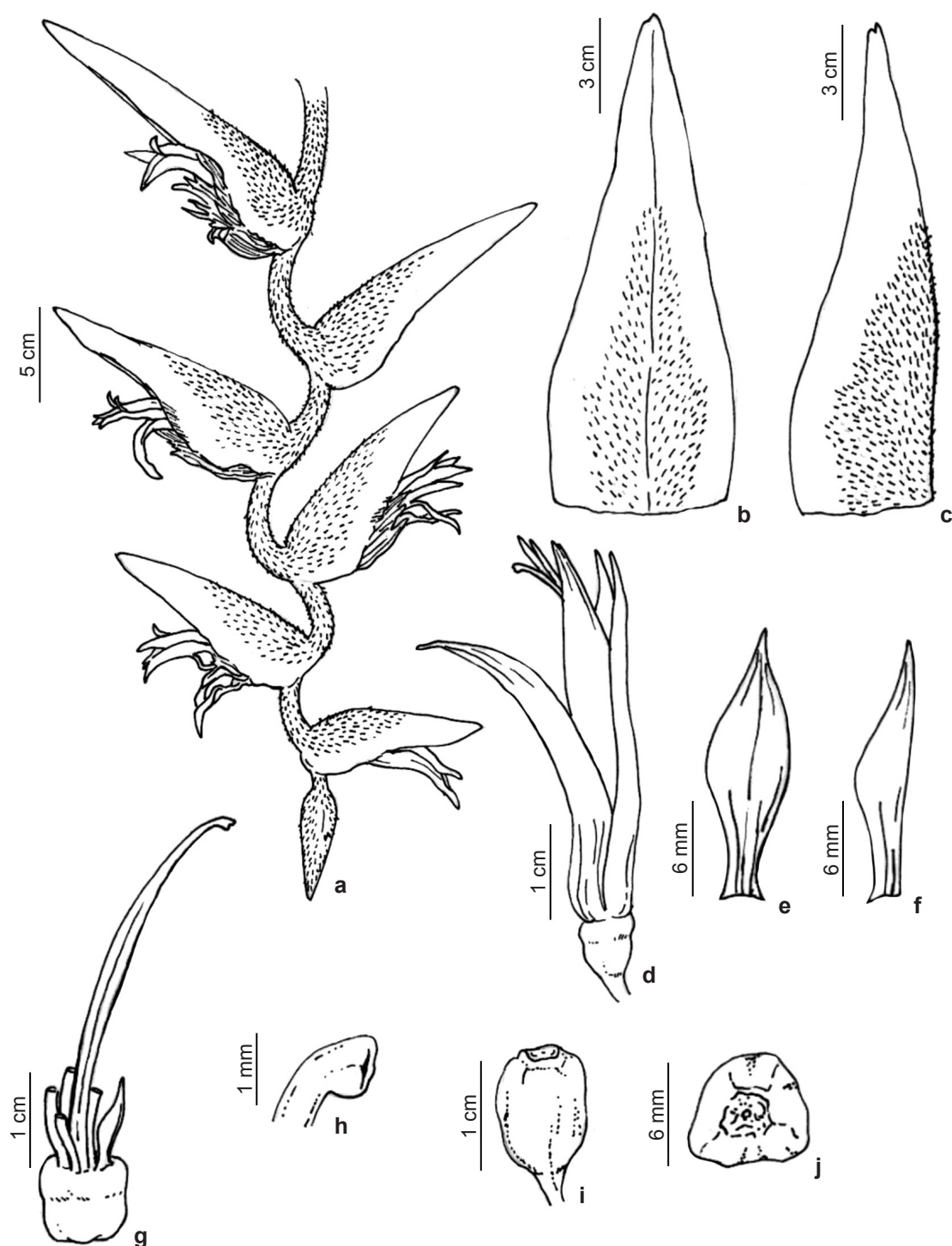


Figure 3 – a–j. *Heliconia pendula* – a. pendant inflorescence; b. bottom view of bract; c. side view of bract; d. flower; e. bottom view of staminode; f. side view of staminode; g. open flower highlighting the style and staminode; h. enlargement of stigma; i. side view of drupe; j. top view of drupe. (a. Gomes & Xavier 210918; b–h. Lima-Verde (EAC 23876); i–j. Gomes & Xavier 210918).

other species by having pendent inflorescence (*vs.* erect) and pubescent (*vs.* glabrous) and bracteole lacerated in fruiting (*vs.* entire).

The species occurs in Guyana, French Guiana, Venezuela and in the Northeast and Southeast regions of Brazil, with distribution only in the Atlantic Forest (Braga 2024; Govaerts & Kress 2023). In Ceará, it is recorded in the municipalities of Guaramiranga, Maranguape, Pacatuba and São Benedito, preferentially inhabiting Dense Ombrophilous Forest, and in Uruburetama in Semideciduous Seasonal Forest (Fig. 1).

Heliconia pendula was collected with flowers and fruit in Juny and February.

The uses for this species are not registered.

The vernacular names of this species are *bananeira-de-macaco*, *banana-de-macaco*.

3. *Heliconia psittacorum* L.f., Suppl. Pl. 158 (1782). Figs. 1; 4a-l

Herb, 0.5–2 m high. Petiole 9–31 cm long. Leaf blade 52–60 × 4.6–12.6 cm, lanceolate to oblong, base rounded, asymmetric or attenuate, apex acuminate or attenuate, margin entire. Inflorescence terminal, erect; peduncle 29–51 cm long, without scar; rachis 4–10 cm, straight, glabrous, fully exposed. Bracts 4–17 × 0.8–1.2 cm, distichous, lax, cymbiform, glabrous, persistent, apex straight, 3–5 per inflorescence, red, orange or pink. Bracteole 2–2.7 × 0.2–0.5 cm, lanceolate, apex acute, white, entire or lacerated in fruiting. Flowers resupinate, 6–10 per bracts; perianth fully exposed, orange with dark green maculae at apex; dorsal sepals 4–4.3 × 0.8–1 cm, lanceolate, apex acute, straight or slightly curved; ventral sepals 3.9–4.2 × 0.2–0.3 cm, lanceolate, apex acute; petals 4.7–5 × 0.5 cm, oblong, apex acute, orange with green macule at the apex; fertile stamens 3.7–4.5 cm; staminode 1–1.2 × 0.2, oblong, apex acuminate; style 3.9–4.3 cm; ovary 0.4–0.6 cm, obovoid, trilobular. Drupe 0.5–0.8 × 0.9 cm.

Examined material: Barbalha, APA Chapada do Araripe, Sítio Santa Rita, 07°21'55"S, 39°19'20"W, 3.VIII.2011, fl. and fr., *E.V.R. Ferreira 246* (HVASF). Baturité, Mata do Machado, Sítio Labirinto dos Taveiros, 04°19'43"S, 38°53'04"W, 28.V.2009, fl., *L.W. Lima-Verde et al. 3615-09* (EAC). Caucaia, Parque Botânico do Ceará, 03°42'32"S, 38°38'32"W, 29.V.2018, fl. and fr., *E.M.P. Lucena et al. 149* (EAC). Crato, Sítio Coqueiro, 07°16'43"S, 39°25'46"W, 20.V.2005, fl. and fr., *M.A.P. Silva et al.* (HCDAL 1967). Granjeiro, Rio Granjeiro, 06°53'18"S, 39°13'04"W, 10.I.1934, fl. and fr., *P. Luetzelburg* (EAC 36010). Guaramiranga, Pico Alto, 04°12'34"S, 38°58'13"W, 28.III.2015, fl., *M.I.B. Loiola 2569* (EAC). Ibiapina, 03°55'24"S, 40°53'21"W, 18.XII.2007, fl. and

fr., *M.M.P. Boto 73* (HUEFS). Itapipoca, Comunidade Quilombola de Nazaré, 03°33'52"S, 39°33'10"W, 9.XII.2017, fl. and fr., *JCMSM Jobczak 744* (EAC). Maranguape, Sítio São Salvador, Serra da Aratanha, 03°53'27"S, 38°41'08"W, 21.XII.1939, fl., *P. Bezerra* (EAC 704). Pacatuba, 03°59'08"S, 38°37'23"W, 2.VII.2022, fl., *L.M. Sousa & M.I.B. Loiola 83* (EAC). Pacoti, Sítio Olho d'Água dos Tangarás, 04°13'30"S, 38°55'23"W, 16.IX.1995, fl., *L.W. Lima-Verde* (EAC 23192). São Gonçalo do Amarante, Pecém, 1.V.2011, fl., *A.S.F. Castro 2474* (EAC). Ubajara, Caminho para nascente do Vitalício, 03°51'16"S, 40°55'16"W, 7.XI.2007, fl., *L.Q. Matias 540* (EAC); Parque Nacional de Ubajara, trilha da Samambaia, 03°50'36"S, 40°54'07"W, 5.VI.2012, fl. and fr., *M.I.B. Loiola et al. 1780* (EAC); Murimbeca, Planalto da Ibiapaba, 03°51'16"S, 40°55'16"W, 25.II.1999, fl., *A. Fernandes* (EAC 27900).

Additional material examined: BRAZIL. PERNAMBUCO: Bonito, Reserva Ecológica Municipal da Prefeitura de Bonito, 15.III.1995, fl., *E. Menezes et al. 56* (NY, PEUFR). Igarassu, Usina São José, Mata da Zambana, 07°42'12"S, 34°58'11"W, 22.XII.2007, fl., *A. Alves-Araújo et al. 777* (HVASF). VENEZUELA. COJEDES: Alrededores de Tinaquillo, Hacienda Aguirre, VII.1960, fl., *L. Aristeguieta 4310* (NY). Sitios sombríos. Alrededores de Tinaquillo, Hacienda Aguirre, Edo, Cojedes, VII.1960, fl., *L. Aristeguieta 4310* (MO).

Heliconia psittacorum shares with *H. spathocircinata* erect inflorescence and lax, spiral, persistent bracts. However, *H. psittacorum* has bracts with straight apex (*vs.* circinnate) and fully exposed perianth (*vs.* partially exposed).

This species is registered in the Antilles, Brazil, Colombia, Guyana, French Guiana, Panama, Suriname, and Venezuela (Govaerts & Kress 2023). In Brazil, it occurs in the Mid-West, Northeast, North and Southeast regions in the Amazonia, Caatinga, Cerrado, Atlantic Forest and Pantanal domains (Braga 2024). In Ceará, it has been recorded in 13 municipalities, occurring mainly in Dense Ombrophilous Forest, followed by the Vegetation Complex of the Coastal Zone and Semideciduous Seasonal Forest (Fig. 1). Populations of this species have records in the APA Conservation Units of Chapada do Araripe, Ceará Botanical Park and Ubajara National Park.

Heliconia psittacorum was collected with flowers in all months, except October, and with fruits in January, February, April, May, June, July, September and December.

The species is widely used in garden areas or sold as cut flowers for decoration and has a wide variety of cultivars (Pinto 2007; Castro *et al.* 2011).

The vernacular names of this species are *helicônia*, *pacavira*, *banana-de-macaco*.

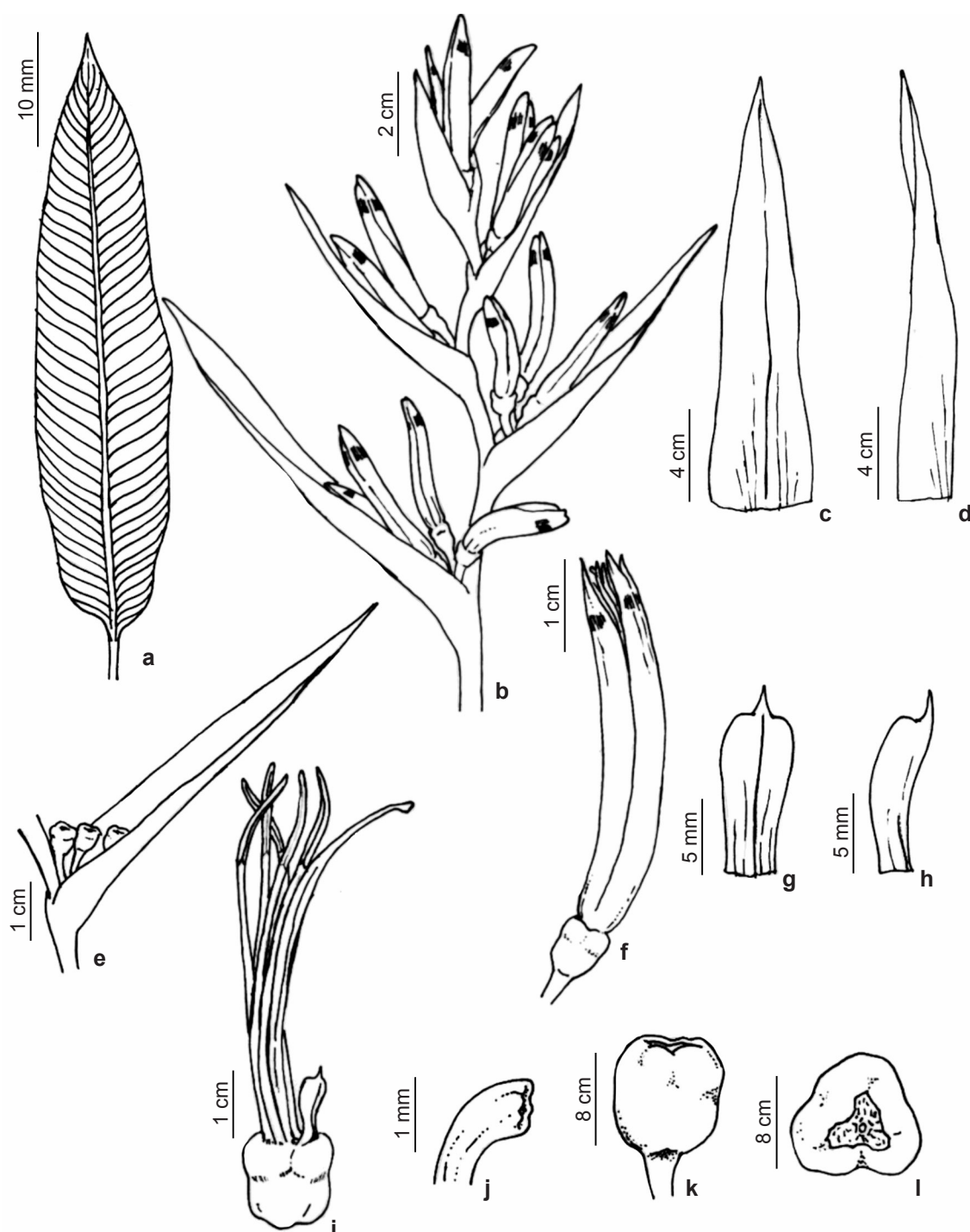


Figure 4 – a-l. *Heliconia psittacorum* – a. leaf; b. erect inflorescence; c. bottom view of bract; d. side view of bract; e. bract highlighting the ovaries; f. flower; g. bottom view of staminode; h. side view of staminode; i. open flower highlighting the androecium, style, and staminode; j. enlargement of stigma; k. side view of drupe; l. top view of drupe. (a. Sobczak 744; b-d. Lima-Verde (EAC 23192); e. Sobczak 744; f-j. Sousa & Loiola 83; k-l. Loiola 1780).

4. *Heliconia spathocircinata* Aristeg., Gen. *Heliconia* Venez. 14 (1961). Figs. 1; 5a-j

Herb, 1.5–3 m high. Petiole 32–78 cm long. Leaf blade 52–78 × 11.5–22 cm, elliptical to lanceolate, base asymmetric to attenuate, apex

acuminate to attenuate, margin entire. Inflorescence terminal, erect; peduncle 17–41 cm long, without scar; rachis 9.5–22 cm, sinuate, glabrous. Bracts 7–21 × 1.5–3 cm, spiral, lax, cymbiform, glabrous, persistent, apex circinate, 6–8 per inflorescence, red

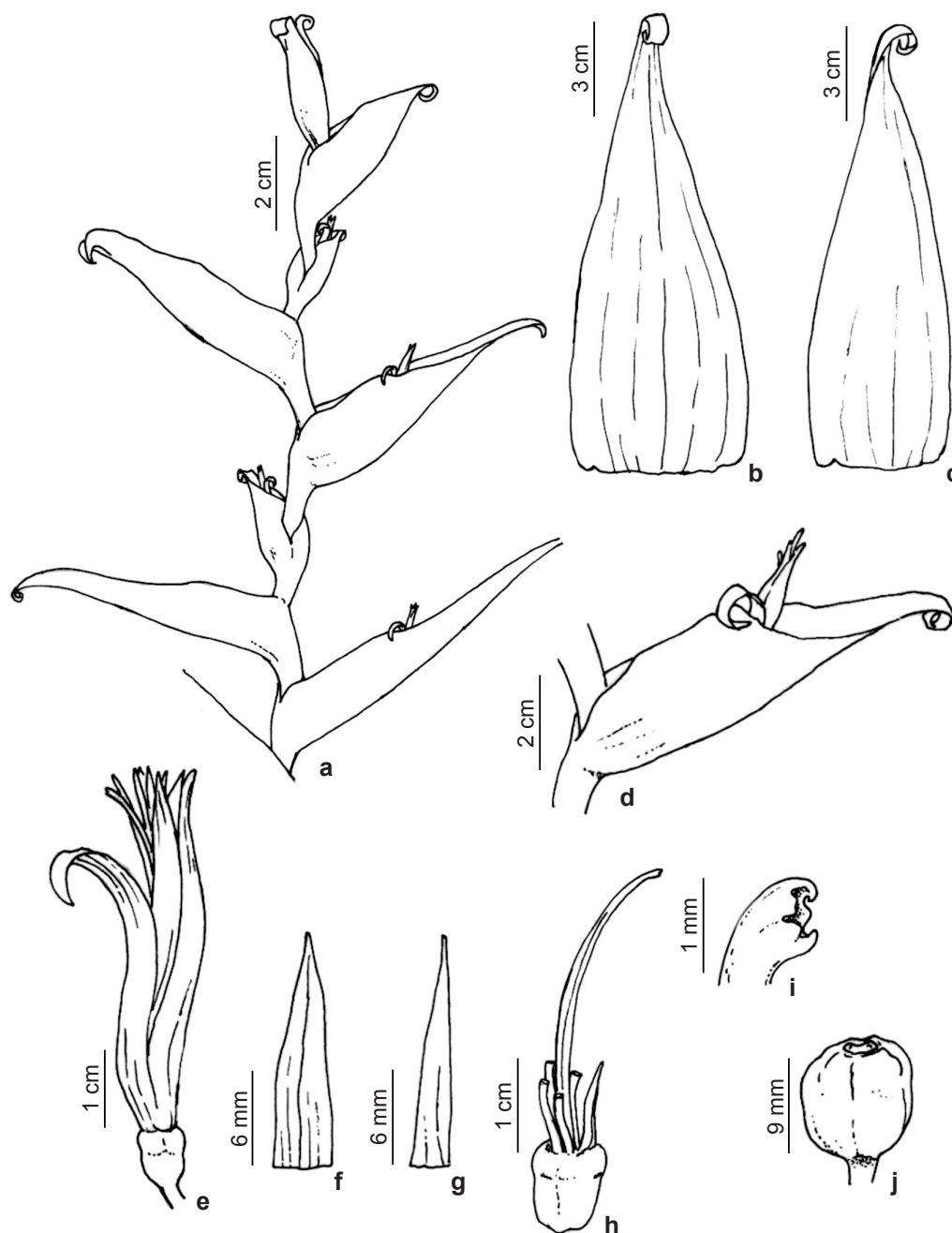


Figure 5 – a-j. *Heliconia spathocircinata* – a. erect inflorescence; b. bottom view of bract; c. side view of bract; d. bract with flower; e. flower; f. bottom view of staminode; g. side view of staminode; h. open flower highlighting the style and staminode; i. enlargement of stigma; j. side view of drupe. (a. *Fernandes & Matos* (EAC 3971); b-c. *Matias & Leone* 643; d. *Fernandes & Matos* (EAC 3971); e-i. *Lima-Verde* (EAC 22071); j. *Matias & Leone* 643).

to orange. Bracteole 3–4.3 × 0.5–0.8 cm, lanceolate to deltoid, apex acute to acuminate, yellow or white yellowish, lacerated in fruiting. Flowers non-resupinate, 5–7 per bracts; perianth partially exposed, yellow; dorsal sepals 3.6–5 × 0.3–0.5 cm, lanceolate, apex acute, straight or slightly curved; ventral sepals 3.5–4.5 × 0.1–0.2 cm, lanceolate, apex acute; petals 3.4–4.7 × 0.2–0.4 cm, oblong, apex acute, yellow; fertile stamens 3–4.5 cm long; staminode 1.1–1.2 × 0.1–0.2 cm, linear, apex acuminate; style 3.4–4.6 cm; ovary 0.4–0.5 cm, obovoid, trilocular. Drupe 0.8–1 × 0.6–0.8 cm.

Examined material: Maranguape, trilha Pico da Rajada, 03°53'27"S, 38°41'08"W, 4.III.2002, fl., *L.W. Lima-Verde* (EAC 31483). Pacoti, Sítio Olho d'Água dos Tangarás, 04°13'30"S, 38°55'23"W, 11.II.1995, fl., *L.W. Lima-Verde* (EAC 22071). Ubajara, paredão na saída de Ibiapina para Mucambo, 03°54'27"S, 40°52'19"W, 4.VI.2012, fl. and fr., *L.Q. Matias & D. Leone 643* (EAC); Parque Nacional de Ubajara, Serra da Ibiapaba, 03°51'16"S, 40°55'16"W, 3.VII.1978, fl. and fr., *A. Fernandes & F.J.A. Matos* (EAC 3971).

Additional material examined: BRAZIL. PERNAMBUCO: Cabo de Santo Agostinho, Reserva Ecológica do Gurjaú, Mata de São Braz, 08°13'37"S, 35°04'10"W, 10.VI.20023, fl. and fr., *J.A. Siqueira Filho 1332* (HVASF). PANAMÁ. ZONA DO CANAL: Ilha de Barro Colorado, no Lago de Gatun, Picada Shannon, 28.IX.1965, fl., *L.E. Mello Filho 2143* (R).

Heliconia spathocircinata is characterized by the bracts with circinnate apex and partially exposed perianth. It is similar to *H. psittacorum*, but is differentiated in the comments of this species.

Heliconia spathocircinata occurs in Peru, Colombia, Venezuela, Brazil and the Guyanas (Santos 1978). In Brazil, it has been recorded in the Mid-West, Northeast, North and Southeast regions in the Amazonia, Caatinga, Atlantic Forest and Pantanal domains (Braga 2024; Govaerts & Kress 2023). In Ceará, this species was cited in three municipalities (Maranguape, Pacoti and Ubajara) in Dense Ombrophilous Forest (Fig. 1). Populations of this species have been recorded in Ubajara National Park.

The species was collected with flowers in August, January, February, March, April and June and with fruits in June and July.

The uses for this species are not registered.

There is no vernacular name registered for this species.

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Data availability statement

In accordance with Open Science communication practices, the authors inform that all data are available within the manuscript.

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