

Advancing knowledge of West African morning glories: a taxonomic account of *Ipomoea* (Convolvulaceae) from Ghana

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Abstract: Ghana's plant diversity is estimated at 3,419 plant species, belonging to 1,222 genera. However, a Flora of Ghana is yet inexistent, and targeted floristic and taxonomic studies are still much needed to document the plant diversity of the country fully at the family, generic and species levels. This is essential for identifying priority conservation areas in the country and support further research in crop wild relatives or medicinal plants, which will help tackle food insecurity and improve livelihoods. In this study, we provide a taxonomic revision of the genus *Ipomoea* in Ghana to enhance their identification, conservation and sustainable utilization as food and medicine among other uses. An extensive literature review was carried out, including historical references and online taxonomic databases, to recover information on accepted names, type specimens and synonyms, followed by consultation of herbarium specimens at GC, to retrieve morphological information and database specimens. Specimen locality information

was georeferenced, and records plotted onto distribution maps. As a result, this work provides an identification key to the species of genus *Ipomoea* of Ghana, nomenclatural information, comprehensive morphological descriptions, detailed list of examined specimens, distribution maps and notes on conservation status and traditional plant uses. In total, 28 species are fully described, 20 of which are native and eight introduced from the Americas; five are new records to Ghana.

Keywords: Conservation, Education, Identification, Morphology, Traditional uses, Plant Taxonomy.

Introduction

Ghana is located in West Africa, bounded by Burkina Faso on the north, Togo on the eastern border, Côte d'Ivoire on the west, and the Gulf of Guinea on the south. It is home to 3,419 species of plants, belonging to 1,222 genera (POWO, 2024). From south to north, three main vegetation types can be found: the forest zone, the coastal

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savanna, and the northern savanna zone (Asase *et al.*, 2010). There are also many types of biomes, but the tropical high forests and the savannas are the two major areas represented (Ministry of Environment and Science, 2016). Ghana has a total surface area of 238,540 km²; half of the country is below 152 m (500 feet) above sea level, and the highest point is 883 m above sea level; the average monthly rainfall in June ranges from 152 to 254 mm; January is a dry month, while August is the driest month in the eastern coastal regions (Ghana Meteorological Agency, 2022).

Convolvulaceae, commonly known as the plant family of “morning glories” and “sweet potato” is an important source of food, medicine and several ornamental plants. It comprises *c.* 1,977 species distributed among 60 genera (Eserman *et al.*, 2023), occurring across tropical and temperate regions. They can be herbs, shrubs, or twiners with alternate leaves, actinomorphic (4) 5-merous flowers; usually free and overlapping sepals, tubular corolla with distinct midpetaline bands, superior ovary, and usually dehiscent 4-seeded capsular fruit (Staples & Brummitt, 2007; Bramley, 2020; Simões, 2023).

Ipomoea L. is the largest genus in the family Convolvulaceae with 635 accepted species; the species of *Ipomoea* are ubiquitous, spreading majorly in tropical and subtropical regions and some concentrated in temperate regions (Eserman *et al.*, 2020; Wood *et al.*, 2020; POWO, 2024). Economically, *Ipomoea* is of intrinsic economical value ranging from ornamentals, medicinals to food plants (Gill & Nyawuame, 1991; Folorunso, 2013; Sultana & Rahman, 2016; Wood *et al.*, 2020). *Ipomoea purpurea* (L.) Roth, *Ipomoea batatas* (L.) Lam. and *Ipomoea violacea* L., for example, are exploited for their ornamental, culinary, religious ritual and medicinal values (Eserman *et al.*, 2020; Srivastava & Rauniyar, 2020; Wood *et al.*, 2020). Morphologically, species in *Ipomoea* are mostly herbaceous to woody twiners or small trees, with great variation in corolla shape and colour, as well as other vegetative and reproductive characters

(Meira *et al.* 2012; Eserman *et al.*, 2020). It is also the genus of “sweet potato” (*Ipomoea batatas* (L.) Lam.), an important crop and important nutritional source all over the world (Joseph & Anthony, 2014). In many African countries, including Ghana, they serve as a highly nutritious source of food that has been used to curb hunger and malnutrition (Darkwa & Darkwa, 2013); in East Africa, the demand for sweet potato has been increasing with the growing interest in “super vegetables” (Cernansky, 2015).

However, many taxonomic and conservation gaps exist in this genus, especially in tropical Africa. A recent monographic work of *Ipomoea* focused mostly on the American continent (Wood *et al.*, 2020), excluding the greatest part of African and Asian species. Thus, of the 635 species of *Ipomoea* currently accepted (POWO, 2024), only 72 have had their conservation status assessed, which corresponds to *c.* 11% of the accepted species. Of those assessed, six are Critically Endangered, 15 Endangered, and nine Vulnerable (IUCN, accessed February 2024). Therefore, 89% of the species of *Ipomoea* across its global distribution remain of unknown conservation status.

For West Africa, the latest available flora account of Convolvulaceae is the Flora of West Tropical Africa, reporting 75 species belonging to 16 genera: of these, 41 species (more than half) belonging in genus *Ipomoea* (Heine, 1963). However, six decades later, the available literature for Convolvulaceae in West Tropical Africa is yet scanty, with no comprehensive taxonomic revisions for the family or of *Ipomoea* species in the region so far. For Ghana, there is not yet a Flora account of the flowering plants of the country, and neither a taxonomic treatment of Convolvulaceae. Hence, the number of species, where they occur, their economic or traditional use, and their conservation status is not yet fully documented, undermining broader studies on the floristic diversity of Ghana, conservation efforts and further research on its useful plants.

The overall goal of this research work is to compile detailed and reliable information on species of *Ipomoea* L. in Ghana, a diverse and widely economically important genus that includes morning glories and sweet potato wild relatives, to enhance their identification, conservation and sustainable utilization as food and medicine. An identification key, full morphological descriptions, and notes on distribution, conservation and traditional uses are provided for all species of *Ipomoea* L. that we were able to document in Ghana through a variety of sources: taxonomic literature, analysis of herbarium collections at the GC herbarium in Accra, Ghana and the K herbarium in London, U.K., and taxonomic online resources.

Material and Methods

The present taxonomic work is the result of a group project that was carried out during the “Plant Taxonomy Skills for Ecology and Conservation” course that took place at the GC Herbarium in August 2022, jointly organized by Royal Botanic Gardens, Kew and the University of Ghana, with 15 participants from eight African countries (Angola, Benin, Ethiopia, Ghana, Kenya, Nigeria, Uganda and Madagascar). Initially, individual participants produced taxonomic treatments for single species of *Ipomoea*, selected among those reported to occur in Ghana in the literature and online databases. Later, in groups of three participants, they compiled treatments of five species per group based on in-person analyses of herbarium collections at the GC Herbarium.

As a first step for the taxonomic assignment, an extensive literature review was conducted for all species of genus *Ipomoea* L. reported to occur in Ghana, based on taxonomic databases (IPNI, POWO, BHL, JSTOR Global Plants, and African Plant Database), floristic treatments from other African regions such as *Flora of West Tropical Africa* (Heine, 1963), *Flora of Central Africa* (Mwanga-Mwanga *et al.*, 2022), *Flora of Madagascar* (Derooin, 2001), *Flora of Ethiopia and Eritrea* (Demissew, 2006), recent taxonomic works of the genus

Ipomoea (e.g. Wood *et al.*, 2020) and a wide range of other relevant literature with information on plant uses, chemistry, distribution or conservation status. Thus, available online taxonomic resource tools were also used to confer accepted species names, identify synonyms and locate type specimens (e.g., BHL, 2022; JSTOR, 2022; POWO, 2024).

Preliminary morphological descriptions were drafted based on the specialised taxonomic literature, and a morphological data matrix was compiled in Microsoft Excel, containing information on morphological characters for each species. A total of 369 plant specimens were consulted from Ghana (GC), which allowed us to revise the morphological data matrix in accordance with the variation found among Ghanaian collections. It also allowed us to identify potential species records not present in the literature. The specimen identification was first confirmed using Floras and other taxonomic literature, and morphological observations were carried out using a stereomicroscope, hand lens and ruler. Key morphological characters, like leaf shape, base, margin, apex, size and indumentum, were recorded. The complete morphological descriptions for each species were assembled from the morphological data matrix with the aid of a semi-automatic tool (Mail Merge, in Microsoft Word). The species identification key was prepared by comparison of the morphological differences and similarities of the species on the morphological data matrix, and the key was tested against herbarium specimens to ascertain its use for identification.

Information was collected from the labels of all specimens examined, and databased to obtain ancillary information for the taxonomic treatment of each species. The geographical data was retrieved from examined specimens; for specimens that had sparse information on the geographical location, these were further investigated using online tools such as Google Earth (<https://www.google.com/earth>), with coordinates estimated to the nearest town.

Table 1. List of species of *Ipomoea* in Ghana, their distribution (both native and introduced ranges) and known uses.

Species	Geographical Distribution	Uses
NATIVE		
<i>Ipomoea aitonii</i> Lindl.	Africa, S. Arabian Peninsula, Indian Subcontinent	-
<i>Ipomoea aquatica</i> Forssk.	Tropical Africa and Asia,	Food, Medicinal
<i>Ipomoea argenteaurata</i> Hallier f.	West tropical Africa to Chad	Cultural, Medicinal
<i>Ipomoea asarifolia</i> (Desr.) Roem. & Schult.	Tropical West Africa, Asia and America	Medicinal
<i>Ipomoea blepharophylla</i> Hallier f.	Tropical Africa	Medicinal
<i>Ipomoea cairica</i> (L.) Sweet	Tropical Africa and Asia	Food, Medicinal
<i>Ipomoea coscosperma</i> Hochst. ex Choisy	Tropical and southern Africa	Medicinal, Other uses
<i>Ipomoea delpierrei</i> De Wild.	Ivory Coast to West Central Tropical Africa	-
<i>Ipomoea eriocarpa</i> R.Br.	Tropical Africa, Asia and Australia	Food, Medicinal, Other uses
<i>Ipomoea heterotricha</i> Didr.	Tropical Africa	-
<i>Ipomoea imperati</i> (Vahl) Griseb	Tropical and subtropical coasts worldwide	Medicinal
<i>Ipomoea involucrata</i> P.Beauv.	Tropical and southern Africa	Food, Cultural
<i>Ipomoea mauritiana</i> Jacq.	Tropical to southern Africa and tropical America	Medicinal
<i>Ipomoea obscura</i> (L.) Ker Gawl.	Tropical to southern Africa, tropical America, Asia, Australia and Pacific islands	-
<i>Ipomoea pes-caprae</i> (L.) R.Br.	Tropical and subtropical coasts worldwide	Medicinal, Other uses
<i>Ipomoea pyrophila</i> A.Chev.	West and Central Africa	-
<i>Ipomoea rubens</i> Choisy	Tropical Africa and Old-World Tropics	Medicinal, Ornamental
<i>Ipomoea stenobasis</i> Brenan	West tropical Africa to Uganda	-
<i>Ipomoea verbascoidea</i> Choisy	Tropical and southern Africa	Cultural
<i>Ipomoea violacea</i> L.	Tropical and subtropical coasts	Food, Medicinal

INTRODUCED		
<i>Ipomoea alba</i> L.	Native to tropical America, introduced to Africa, tropical Asia and Pacific	Ornamental, Cultural, Food, Medicinal
<i>Ipomoea batatas</i> (L.) Lam.	Native range: Mexico to Venezuela and Ecuador; widely cultivated elsewhere	Food
<i>Ipomoea hederifolia</i> L.	Tropical and subtropical America	Ornamental
<i>Ipomoea indica</i> (Burm.) Merr.	Tropical and subtropical America	Ornamental
<i>Ipomoea intrapilosa</i> Rose	Native to Mexico	Ornamental
<i>Ipomoea nil</i> (L.) Roth	Tropical and subtropical America	Ornamental
<i>Ipomoea quamoclit</i> L.	Native to Central America. Widely cultivated elsewhere	Ornamental
<i>Ipomoea triloba</i> L.	Native to Mexico, Central and South America	-

Species conservation status was retrieved from the IUCN Red List of Threatened Species website (<https://www.iucnredlist.org/>). Morphological terminology followed the Kew Plant Glossary (Beentje, 2015), and herbarium citations followed the Index Herbariorum (Thiers, 2016, & continuously updated). After the course, the information from all project groups was compiled in the present taxonomic revision by adding the outstanding species, updating information against more recent versions of taxonomic databases, and re-analysing GC and K collections. Then, all authors collaborated remotely in the writing of the manuscript and refining taxonomic and nomenclatural details.

Results

Ipomoea is represented by 28 species in Ghana: of these, 20 are native, and eight were introduced from the Americas, presumably for their ornamental, food or medicinal uses (Table 1). Five are recorded here for the first time to occur in Ghana, two of which are native (*I. pyrophila*

A.Chev. and *I. stenobasis* Brenan) and three presumed introduced from the Americas (*I. intrapilosa* Rose, *I. quamoclit* L. and *I. triloba* L.). Among the 28 inventoried species, 19 of them have not been evaluated by the IUCN, eight are considered of Least Concern, and one species, *Ipomoea batatas* (sweet potato) has been previously assessed as Data Deficient (Rowe *et al.*, 2019). Detailed descriptions and further taxonomic, nomenclatural, geographic, ethnobotanical and conservation status information are presented in the following Taxonomic Treatment.

Taxonomic Treatment

***Ipomoea* L.**, Sp. Pl. 1: 159 1753, nom. cons. *Type: Ipomoea triloba* L.

Annual or perennial herbs, or rarely shrubs. Stems erect, creeping or twining, sometimes lianescent. Leaves alternate, simple, rarely compound; leaf blades often cordate at the base, margin entire, lobed or ± deeply divided. Inflorescence axillary, in 1-many-flowered cymes, umbelliform, corymbiform, paniculiform or in capituliform

heads, sometimes surrounded by a bracteal involucre. Flowers bisexual. Sepals 5, free, variable in size and shape, herbaceous or leathery, persistent in fruit. Corolla actinomorphic, infundibuliform or rarely hypocrateriform, purple, red, pink, white or yellow, rarely sky blue, throat often darker or lighter than the fauce. Stamens 5, unequal, two usually longer, or sometimes equal, inserted near the base of the tube, included or rarely exerted; pollen pantoporate, echinate; disc annular. Ovary 2–3-locular, ovules 4(–6–10); style 1, filiform, generally glabrous, with 2 globose stigmas, less commonly slightly elongated. Fruit a capsule, ovoid or globose, dehiscent by 2–10 valves or by irregular tears, with (2–) 4 (–10) seeds. Seeds most commonly trigonous or globose, of various size, glabrous or of varying indumentum.

Distribution: The genus comprises 635 species, widespread across all tropical regions; it is the most species-rich genus of Convolvulaceae in Tropical Africa (Mwanga-Mwanga *et al.*, 2022; POWO 2024); 28 species in Ghana.

Key to the species of *Ipomoea* in Ghana

- 1a. Stout shrub or tree; often carrying two glands at the base of the leaf 2
- 1b. Climbing, suberect or prostrate herbs; without two glands at the base of the leaf..... 3
- 2a. Trees; entire plant glabrescent or sparsely pilose; leaves lanceolate to narrowly ovate; corolla white or yellowish white, never with dark purple centre *I. intrapilosa*
- 2b. Stout shrub or subshrub; entire plant densely tomentose, with a mixture of whitish and yellowish trichomes; leaves broadly ovate to suborbicular; corolla pink or mauve, with dark purple centre *I. verbascoidea*
- 3a. Leaves deeply palmately 5–7-lobed..... 4
- 3b. Leaves entire, variable in shape, simple or shallowly 3-lobed..... 5
- 4a. Pair of stipules inserted at the base of the petiole; leaves palmately 5-lobed nearly to base, the outer lobes often lobulate, acutely mucronate; corolla 4.5 cm long, not contracted at the base *I. cairica*
- 4b. Leaves exstipulate; leaves usually 5–7-lobed to about the middle of the lamina, lobes acuminate; corolla c. 7 cm long, contracted at base..... *I. mauritiana*
- 5a. Plants stoloniferous; -leaves sub-succulent, often in aquatic environments, swamps or riverbanks; stems, floating, thick, fistulose or spongy..... 6.
- 5b. Plant without stolon; -leaves not succulent; -stems not spongy or fistulose 9
- 6a. Leaves narrowly to broadly triangular, linear-oblong, lanceolate or linear; corolla infundibuliform with a narrow tube, widening at the top, up to 8.5 cm long, purple, pink or white with a dark centre *I. aquatica*
- 6b. Leaves broadly orbicular or reniform; corolla broadly infundibuliform, up to 6.5 cm long, white, yellow, purple or red purple, with or without dark centre..... 7.
- 7a. Leaves broadly orbicular to reniform; apex obtuse to shortly acuminate *I. asarifolia*
- 7b. Leaves reniform; apex emarginate to deeply bilobed 8.
- 8a. Corolla white or yellow, without dark centre; leaves reniform, apex rounded, base rounded *I. imperati*
- 8b. Corolla pink or red-purple with darker centre; leaves lanceolate, apex cuneate, base acute..... *I. pes-caprae*
- 9a. Inflorescences sessile, many-flowered or sub solitary 10
- 9b. Inflorescences distinctly pedunculate, few-flowered or solitary 12
- 10a. Leaves entire, linear, lanceolate or narrowly oblong-lanceolate, plants glabrous or sparsely pilose 11

- 10b. Leaves entire to shallowly 3-lobed, ovate to linear-oblong in outline, plants densely pubescent with a mixture of whitish tomentose and yellowish hispid indumentum *I. eriocarpa*
- 11a. Leaves oblong-lanceolate; sepals *c.* 6 mm long; corolla 5–8 mm long, as long or slightly longer than the calyx, red or white *I. coscinosperma*
- 11b. Leaves linear or oblong-linear; sepals 15–18 mm long; corolla up to 55 mm long, thrice as long as the calyx, mauve with dark purple centre *I. blepharophylla*
- 12a. Inflorescences many-flowered, densely clustered heads; plants covered in whitish and yellowish indumentum; leaves pubescent 13
- 12b. Inflorescences 1–few-flowered, lax; plants glabrescent rarely pilose; leaves glabrous 17.
- 13a. Bracteoles inconspicuous, up to 7 mm long ..
..... *I. aitonii*
- 13b. Bracteoles large, up to 30 mm long..... 14
- 14a. Bracteoles subtending the inflorescence united into an oval involucre, 3–6 cm long
..... *I. involucrata*
- 14b. Bracteoles subtending the inflorescence not united, 1.4–3 cm long..... 15
- 15a. Plants erect; leaves oblong-lanceolate
..... *I. argentaurata*
- 15b. Plants twining; leaves ovate-subcordate 16.
- 16a. Peduncles 2–5 cm long; corolla 1.5–2 cm; sepals \pm 9 mm; fruits ovoid..... *I. heterotricha*
- 16b. Peduncles 6–14 cm long; corolla 3.5–5 cm; sepals 12–15 mm long; fruits globose
..... *I. delpierrei*
- 17a. Sepals distinctly awned at or below the apex, awn straight or curved; corolla salver-shaped with a long and narrow tube; stamens and style mostly exerted 18
- 17b. Sepals not distinctly awned at or below the apex, obtuse, acute or acuminate, whether mucronulate or not; corolla mostly funnel-shaped, or campanulate, sometimes salver-shaped; stamens and style mostly included, sometimes exerted 20.
- 18a. Corolla scarlet, rarely pure white, 3–4.5 cm long; outer sepals 2–5 mm long (without awn), inner sepals 3–6 mm (without awn); leaves pinnately parted into numerous linear or filiform segments, rarely less deeply pinnately cut 19
- 18b. Corolla white with greenish bands or pale bluish-purple, 5–15 cm long; outer sepals 5–12 mm long (without awn), inner sepals 7–15 mm (without awn) 17. *I. alba*
- 19a. Leaves deeply pinnately dissected, margin toothed *I. quamoclit*
- 19b. Leaves entire, cordate to shallowly 3-lobed, margin entire to coarsely dentate *I. hederifolia*
- 20a. Leaves entire, oblong ovate, narrowly cordate, lanceolate or linear, apex mucronate rarely acute *I. pyrophila*
- 20b. Leaves entire or lobed, ovate, triangular or cordate, apex acuminate..... 21.
- 21a. Leaves covered with blackish dots on the lower surface; sepals imbricate, apex obtuse, glabrous *I. stenobasis*
- 21b. Leaves without blackish dots on the lower surface; sepals not imbricate, apex acuminate, pilose 22
- 22a. Corolla salver-shaped, white and/or pale greenish-yellow with whitish-yellow centre.
..... *I. violacea*
- 22b. Corolla funnel-shaped, mauve, violet to white with purple centre 23.
- 23a. Corolla pubescent outside..... 24
- 23b. Corolla completely glabrous..... 25
- 24a. Corolla yellow, 1.5–2.5 cm long..... *I. obscura*
- 24b. Corolla purplish-red, pink, lilac or white, 4–5 cm long *I. rubens*

- 25a. Ovary 4-locular; fruits 4-valved; corolla pink to mauve..... 26
- 25b. Ovary 3-locular; fruits 3-valved; corolla blue, purple, mauve or magenta..... 27
- 26a. Corolla 1.5–2.5 cm long; leaves sagittate, base auriculate-sagittate, apex acuminate *I. triloba*
- 26b. Corolla 3–5 cm long; leaves triangular to broadly ovate, base cordate, apex attenuate *I. batatas*
- 27a. Leaves ovate to circular, base auriculate, apex acuminate, pubescent; 27. *I. nil*
- 27b. Leaves ovate in outline, base cordate, apex rounded, glabrous..... *I. indica*

1. *Ipomoea aitonii* Lindl., Edwards's Bot. Reg. 21: t. 1794. 1835. *Type*: Illustration in Edwards's Bot. Reg. 21: t. 1794. 1835.

Perennial herbs. Stems prostrate or twining, strong-stemmed, densely covered with white and yellow spreading hairs. Leaves simple, 3-lobed, rarely entire, orbicular in outline, bristly pubescent above, white hairy below, apex acute or acuminate, base cordate, 4.5–13 × 4.5–13 cm; petiole hairy, 4–7 cm. Inflorescences dense cymes, 1-many-flowered; peduncle 1.5–7 (–15) cm long; bracteoles *c.* 7 × *c.* 2 mm. Sepals lanceolate, sticky glandular, with spreading hairs, 12–22 × 25–30 mm. Corolla pink or mauve, 1.2–1.7 (–2) cm long, with dark purple centre, pubescent on the upper portion of the midpetaline bands. Fruits ovoid, sparsely pubescent, 8 mm high; seeds ovoid, pubescent (rarely quite glabrous), black, white tomentose, 4–5 mm long.

Flowering & fruiting: Flowers and Fruits from November to February (Höeine, 1963).

Habitat: Riverine forest, thickets, clearing in bushland, becoming a weed of cultivated ground. This species can grow up to 600 m above sea-level.

Distribution: The native range of *I. aitonii* is throughout tropical Africa, the South Arabian Peninsula and the Indian subcontinent. In Ghana:

Brong Ahafo, Eastern, Ashanti region and Upper West regions (Fig. 1).

Specimens examined: GHANA, **Eastern region**: Abetifi, 20.12.1939, Scholes 110 (GC); Kyibi, Apapam, 16.12.1953, J.K. Morton 8155 (GC); **Ashanti region**: Ashanti Akyim, Agogo, 28.12.1927, F.R. Irvine 583 (GC); **Brong Ahafo region**: Sunyani, 1000ft, 18.12.1954, C.D. Adams 2754 (GC); **Northern region**: Talense south, near Burufo, 20.12.1950, C.D. Adams 4451 (GC).

Conservation status: Not evaluated.

Uses: The seed is used in medicine as a laxative; the leaf is used as fodder in agri-horticulture (Burkill, 1985).

2. *Ipomoea alba* L., Sp. Pl. 1: 161. 1753. *Lectotype* (designated by Verdcourt, 1963: 130): INDIA, **Rheede**, Hort Ind. Malabar 11: 103. t. 50. 1692.

Annual herbs. Stems prostrate or twining, laticiferous, cylindrical, smooth, striate or sometimes muriculate, up to 5 m long, glabrous or rarely pubescent. Leaves simple, entire to 3-lobed, ovate to orbicular in outline, or rarely ovate-oblong, 3–26 × 5–16 cm, apex acute to acuminate or obtuse, mucronate, base cordate, basal auricles rounded to angular, margin entire, covered in small blackish glands on both surfaces of the leaf; petiole glabrous, 2.6–4.5 cm long. Inflorescences axillary; peduncle stout, 1–2.4 cm long; bracteoles small, caducous. Flower mostly solitary: pedicels up to 3 cm long, thickening in fruit. Sepals unequal, subcoriaceous, outer ones elliptic, 0.5–1.2 cm long with a long awn-like appendage, 6–9 mm long, often reflexed, inner ones 0.8–1.5 cm long, shortly acuminate in a triangular apex, *c.* 2.3 mm long, mucronulate. Corolla hypocrateriform, cream-white, fragrant, night-flowering; tube 7–15 cm long, cylindrical to slightly angular; limb 11–16 mm wide. Stamens slightly exerted, filaments subequal, 1–3 cm long, not widened at the base, inserted on the upper portion of the corolla tube, glabrous, anthers ovoid to obovoid 4–5 mm long. Ovary obpyriform, glabrous; style glabrous, 10.5–12.2 cm

long. Fruits ovoid, 2.5–3 × 1.5–2.3 cm, mucronate, glabrous, 2-locular, apiculate, dehiscent by 4 valves; seeds 4, ovoid, 10–13 × 4–9 mm, brown or black, sparsely pubescent with white hairs.

Vernacular names: *bona-nox* (Portuguese); *giant moonflower* (English); *ndiami* (Nigeria: Efik); *bayugsns* (Sierra Leone: Kono); *bukbui* (Sierra Leone: Limba); *kpokpo-hina*, *hina: male* (Sierra Leone: Mende), *maanblom* (Afrikaans) (Burkill, 1985).

Flowering & fruiting: Flowers throughout the year, mostly January and February (Burkill, 1985).

Habitat: Wild in secondary vegetation, but often cultivated for ornament; found in grassland, on riverbanks, along roadsides and in waste places. They can grow up to 400 m above sea level.

Distribution: Native to the Americas and introduced in Africa, Asia and Australia (POWO, 2024). Volta and Greater Accra regions in Ghana (Fig. 6).

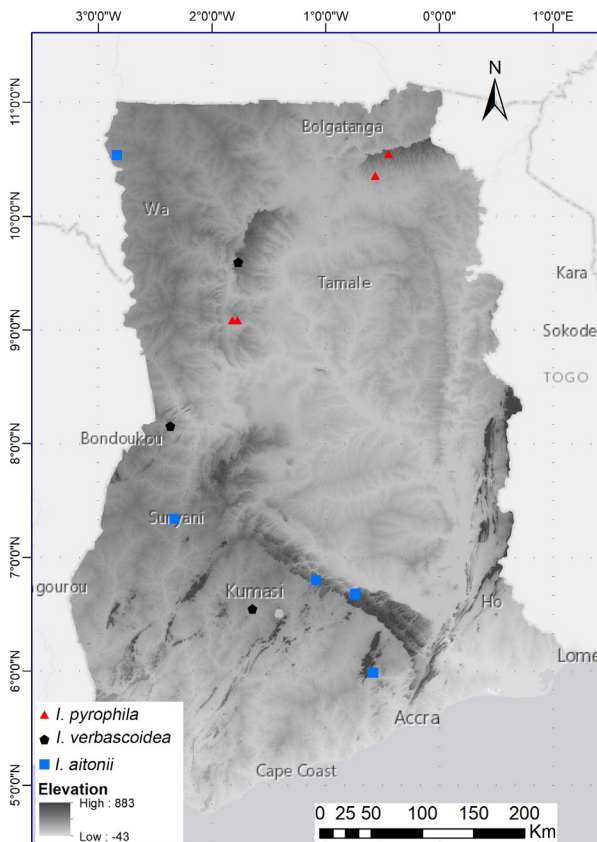


Fig. 1. Distribution records of *I. verbascoidea* Choisy, *I. pyrophila* A. Chev. and *I. aitonii* Lindl. in Ghana.

Specimens examined: GHANA, **Greater Accra region**, Legon, Legon hill, waste place, 1.01.1956, C.D. Adams 3649 (GC); Krepri plains, 24.01.1900, W.H. Johnson 548 (GC).

Uses: The leaves of *Ipomoea alba* can be eaten as food, either cooked or uncooked, and probably as a supplementary famine food; whole herb is used to treat snake bite, the root bark is used as a purgative and the aerial part is used as an anti-pyretic, hypotensive and emollient; the leaves are used to treat headaches (Burkill, 1985).

Conservation status: Least Concern (Canteiro, 2021).

3. *Ipomoea aquatica* Forssk., Fl. Aegypt. -Arab. 44. 1775. Type: YEMEN, Zabid, 05.04.1763, Forsskål 447 (holotype C [C10002419!], isotype BM000930424!).

Perennial, less often annual, fleshy, stoloniferous, herb. Stems prostrate or floating, fistulose, rooting at the nodes, terete, glabrous or pilose at the nodes,

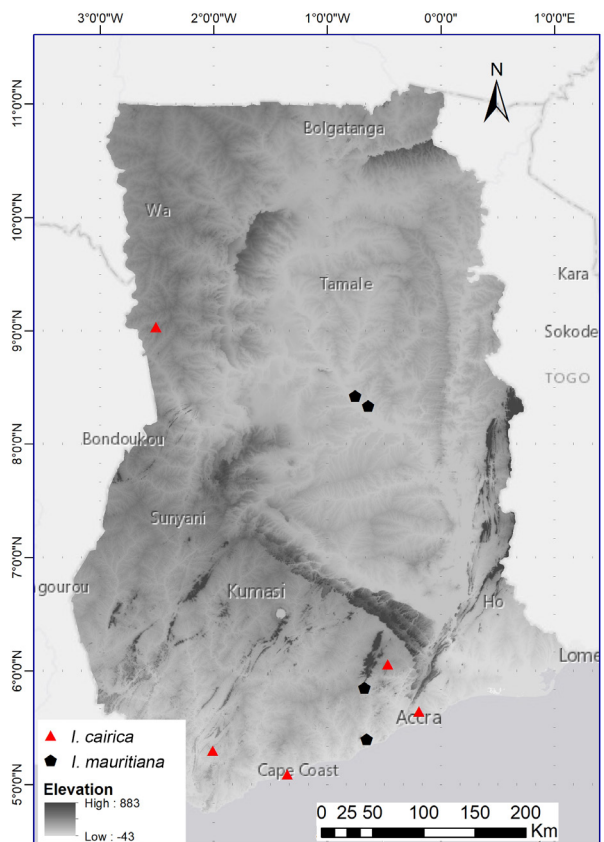


Fig. 2. Distribution records of *I. mauritiana* Jacq. and *I. cairica* (L.) Sweet in Ghana.

smooth, with longitudinal ridges. Leaves simple, linear, lanceolate, ovate to broadly triangular in outline, 3–13 (–17) × 0.5–9 cm, base cordate, sagittate or hastate, apex acute, acuminate, margin entire, glabrous, or more rarely pilose; petioles 1.5–3.5 cm long, glabrous. Inflorescences few-flowered; peduncle up to 14 cm long, thinner than the petiole, glabrous; bracteoles scale-like, narrowly ovate, 1.5–2 mm long, apex acute. Flower solitary: pedicel 1.5–6.5 cm long, glabrous or puberulent at the base. Sepals subequal; the outer ones ovate, 7–12 mm long, slightly shorter than the inner ones, pale along the margins, glabrous, apex obtuse, often mucronulate; inner sepals ovate-elliptic, *c.* 8 mm long, apex mucronate. Corolla funnel-shaped with a narrow tube, (2–)4.5–10 cm long, pink, lilac, pale, dark red, purple with a purple center, or rarely white with dark purple center, glabrous. Stamens unequal, longer ones up to 10 mm, shorter ones 4–5 mm, widened and puberulent at the base; anthers 2

mm long, sagittate. Ovary obpyriform, 2-locular, glabrous; style up to 13 mm long, articulated. Fruits ovoid to globose, 10–14 × 8–12 mm wide, tardily dehiscent or indehiscent; seeds ovoid, densely pubescent.

Vernacular names: water-spinach (English); *weng cai*, *kangkong* (China), *liseron d'eau*, *patate aquatique* (French), *marol* (Somali), *bhaji*, *karmi bhaji*, *marmi bhaji* (India), *swamp cabbage* (Trinidad & Tobago) (Dueñas-López, 2023).

Flowering & fruiting: Flowers and fruits from August to December (Heine, 1963).

Habitat: A helophyte, growing primarily in the seasonally dry tropical biome; in moist, marshy or inundated localities, shallow pools, ditches, rice fields, forming dense masses; also found along roadsides, at elevations from sea level up to 1,000 m.

Distribution: In tropical and subtropical regions of Africa and Asia. In Ghana: Northern, Brong

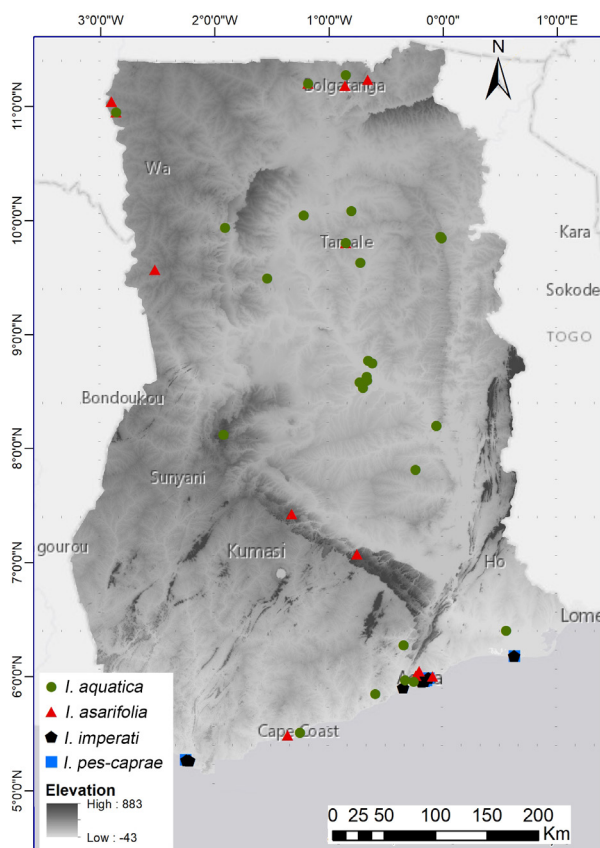


Fig. 3. Distribution records of *I. pes-caprae* (L.) R.Br., *I. imperati* (Vahl) Griseb., *I. asarifolia* Roem. & Schult. and *I. aquatica* Forssk. in Ghana.

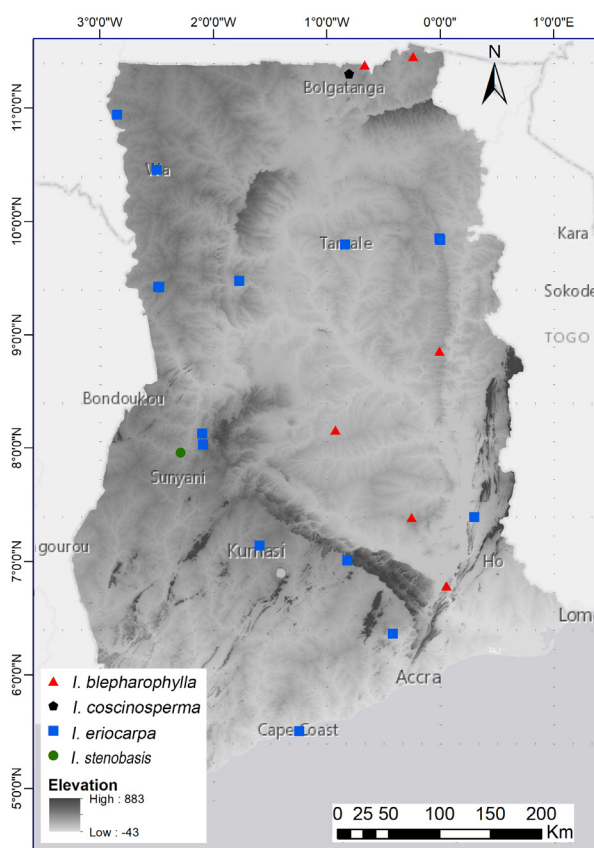


Fig. 4. Distribution records of *I. stenobasis* Brenan, *I. eriocarpa* R.Br., *I. blepharophylla* Hallier and *I. coscinosperma* Hochst. ex Choisy in Ghana.

Ahafo, Central, Upper West, Greater Accra and Volta regions.

Specimens examined (selected): GHANA, **Greater Accra Region**, Mile 12 Accra-Winneba road, 5° 34'25"N, 0°15'04"W, 10.06.1961, *Hall* 1873 (GC); **Central region**, Cape Coast, marshy roadside, 15.12.1964, *J.B.Hall* 2775 (GC); **Northern Region**, Mole Game Reserve 9°29'55"N, 1°59'55"W, 21.11.1994, *C.C.H. Jongkind & C.M.J. Nieuwenhuis* 1891 (GC); c. half mile North of Yeji, 8°12'50"N, 0°38'42"W, 13.08.1963, *Ansah-Emmim & Adom-Boafo* VBS 233 (GC); Yeji, 8°12'50"N, 0°38'42"W, 11.04.1964, *Hall* VBS 1277 (GC).

Conservation status: Least Concern (Gupta & Sayer, 2018).

Uses: The leaf sap of *I. aquatica* is used in medicine for treating insanity; the young plants and leaf are eaten as food either cooked or uncooked; whole plant of *I. aquatica* is used in medicine for general

body healing and the flower buds is used for treating skin diseases (Burkill, 1985; Van Wyk, 2005).

4. *Ipomoea argenteaurata* Hallier f., Bot. Jahrb. Syst. 18(1-2): 132. 1893. Lectotype (designated here): NIGERIA, *Barter* 1031 (lectotype K000097041, isolectotype B †?).

Perennial herbs, or subshrub. Stems prostrate or ascending from a woody base, densely whitish-tomentose with hispid yellow hairs. Leaves simple, oblong, ovate to lanceolate, 2–7 × 0.5–2.5 cm, base rounded, subcordate or cordate, apex attenuate, mucronate; densely strigose on the upper surface and deep green, silvery-silky below; petioles 0.5–1.6 cm. Inflorescences bracteate, heads of flowers large, densely strigose, with long golden-yellow hairs; bracteoles 10–28 × 4–14 mm long, hairy like the calyx. Sepals linear-lanceolate or almost linear, acuminate, silky white on the back, with yellow strigose margins. Corolla large, funnel-shaped,

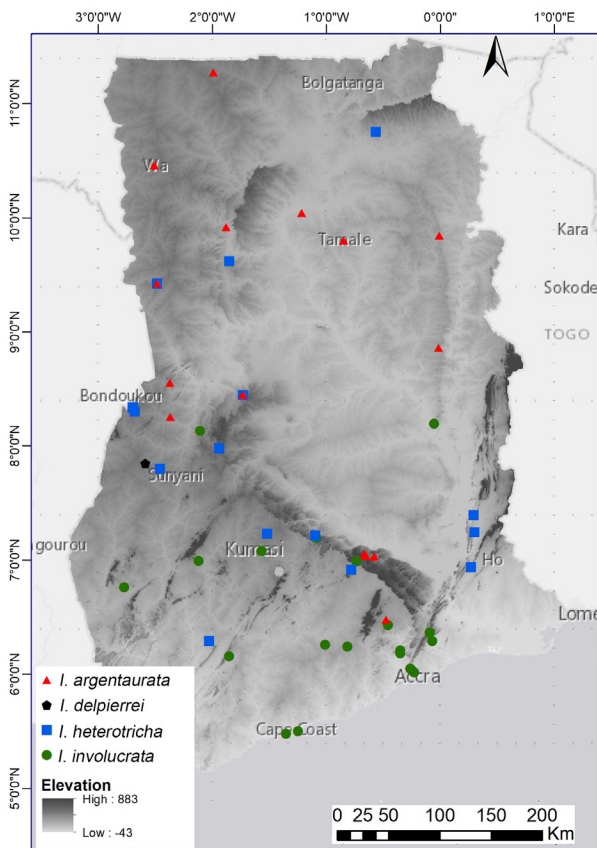


Fig. 5. Distribution records of *I. heterotricha* Didr., *I. argenteaurata* Hallier, *I. delpierrei* DeWild. and *I. involucreta* P.Beauv. in Ghana.

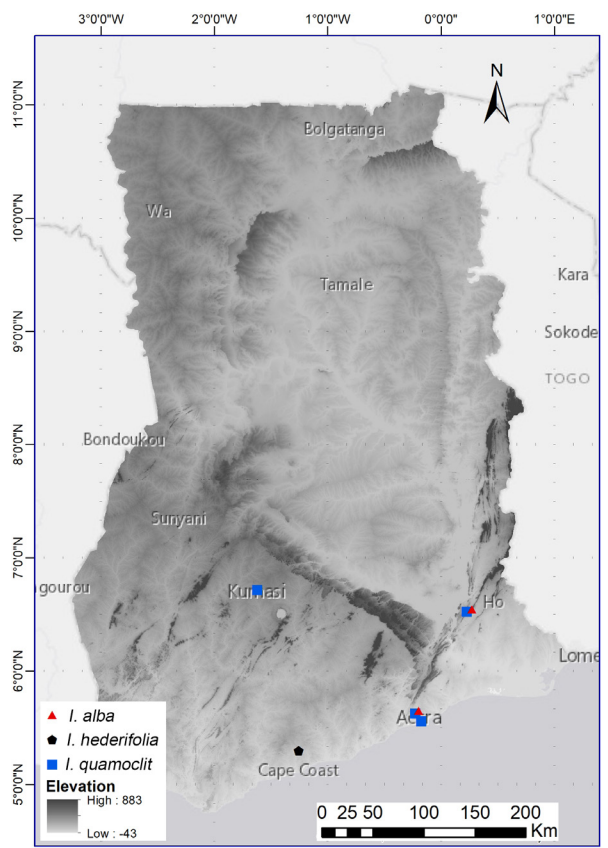


Fig. 6. Distribution records of *I. alba* L., *I. hederifolia* L. and *I. quamoclit* L. in Ghana.

whitish turning light purplish with darker centre, c. 3 cm long, midpetaline bands strigose outside. Fruits 4-valved, glabrous; seeds covered with a dense dark brown pubescence.

Vernacular names: *ukpali*, *fárin gámó*, (Dagani, Dyokogye, Hausa, Ghana); *good luck* (English) (Burkill, 1985).

Flowering & fruiting: Begins flowering and fruiting in June but mostly from August to December (Heine, 1963).

Habitat: A climber, growing primarily in the seasonally dry tropical biome; in savanna habitat (Heine, 1963). They can grow up to elevations of 500 m.

Distribution: Cameroon, Central African Republic, Chad, Ghana, Guinea, Ivory Coast, Nigeria, Sierra Leone, Togo, Benin, Guinea-Bissau, Burkina Faso, Mali and Senegal (Hassler 2022, POWO,

2024). In Ghana: Northern, Brong Ahafo, Eastern, Upper East and Upper West regions (Fig. 5).

Specimens examined: GHANA. **Northern Region**, Damango, a yam farm near the Mole game reserve, Savannah grasslands, 06.12.1965, A.A. Enti 35162 (GC); Kwahu-Tafo, Grassland on flat rocks at 1500', 19.08.1963, J.B. Hall 0098 (GC); Yendi, 28.12.1950, C.D. Adams & G.K. Akpabla 4051 (GC); Tamale, Tamale Girls School compound, 01.10.1954, E.G. Asare 5934 (GC); **Eastern region**, Kwahu-Abowom, on rocks by a pool, 12.06.1970, Hall & Agyakwa 39684 (GC).

Conservation status: Not evaluated.

Uses: The whole plant is used as genital stimulant or depressant; a decoction of aerial parts is drunk while kola nuts are eaten, in Ivory Coast, in the belief that it promotes spermatogenesis; other uses are mainly superstitious, as medicine for witchcraft, worn as an amulet, for example;

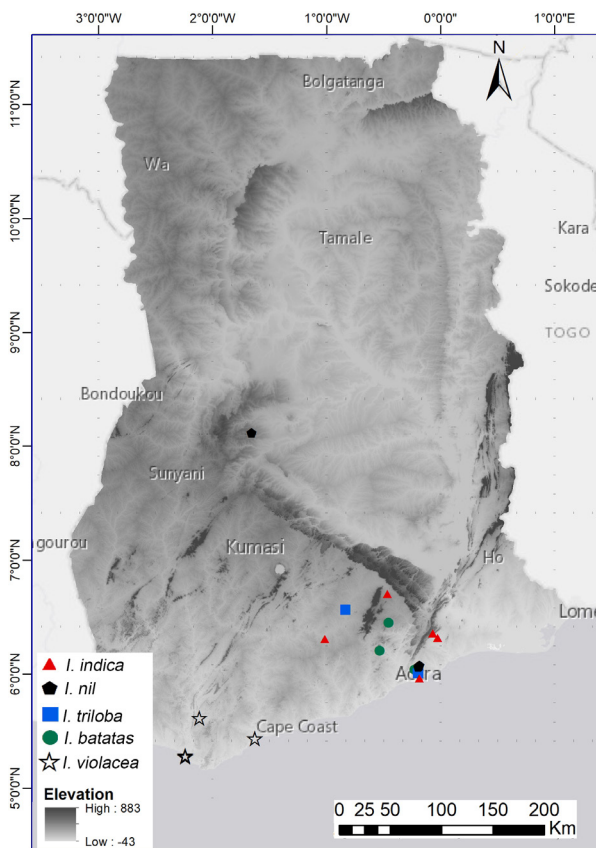


Fig. 7. Distribution records of *I. violacea* L., *I. indica* (Burm.) Merr., *I. nil* (L.) Roth, *I. batatas* (L.) Lam. and *I. triloba* L. in Ghana.

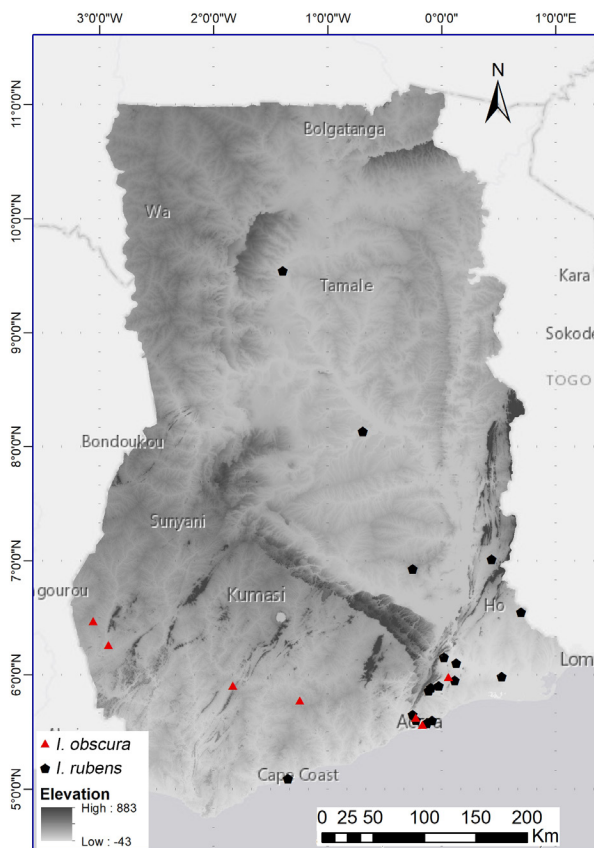


Fig. 8. Distribution records of *I. rubens* Choisy and *I. obscura* (L.) Ker Gawl. in Ghana.

clothing is fumigated with it, not as a scent, but as a charm for the same purpose, or for luck; in Bénin, a leaf decoction together with leaves of *Ficus vallischoudae* Delile, is drunk to treat hyperthermia and a decoction of the leafy twigs is taken to treat kwashiorkor (Burkill, 1985).

5. *Ipomoea asarifolia* Roem. & Schult., Syst. Veg., ed. 15 bis 4: 251. 1819. *Type*: SENEGAL, Roussillon s.n. (holo P-LA [P-LAM00357544]; iso P-JUSS [P-JUSS6798]).

Perennial herbs. Stems prostrate, sometimes twinning, terete or angular, puberulent, with longitudinal ridges. Leaves simple, circular to reniform, 3.5–7 (–13) × 3.5–8.5 (–18) cm, apex obtuse to emarginate, base cordate with rounded lobes, margins entire, glabrous, subcoriaceous; petiole 3–8.5 (–13) cm long, glabrous, thickened and with longitudinal ridges, or minutely muricate. Inflorescences lax, peduncle 2–5 (–9.2) cm; bracteoles ovate, lanceolate, minute, 1–2 mm long. Flowers few: pedicel 1–3 cm long, glabrous. Sepals unequal, elliptic-oblong, apex obtuse, mucronate; outer ones shorter, 5–8 mm long, more or less muricate; inner ones longer, 8–11 mm long. Corolla funnel-shaped, reddish purple, 6–8 cm long, glabrous. Fruits globose, 8.5–10.2 mm long; seeds not seen.

Flowering & fruiting: Flowers and fruits from January to April, although produces flowers all year round (Heine, 1963)

Habitat: A scrambling herb, growing primarily in the seasonally dry tropical biome (POWO, 2024); in sandy areas and waste places in Africa; in marshy grasslands and waysides at elevations up to 600 m (Prota, 2024).

Distribution: Widely distributed across tropical regions (POWO, 2024). In Ghana: Upper East, Eastern, Upper West, Greater Accra, Northern and Central regions (Fig. 3).

Specimens examined: GHANA, **Eastern Region**, Bunso, 6°17'19"N, 0°28'39"W, *s.coll. s.n.* (MO); **Upper East Region**, Bals of White Volta on

road from Bolgatanga to Bawku, 10°47'36"N, 0°51'38"W, 04.04.1953, *Morton s.n.* (GC); Before nyankpala, 22.05.1952, *Morton s.n.* (GC); Busufo grassland, 19.12.1950, *Adams & Akpabla s.n.* (GC); Yamlapa, 01.06.1958, *Harris s.n.* (GC); **Northern region**, Old Dam at Tamale, 18.01.1966, *A.A. Enti & C.W. Agyakwa*, VBS 468 (GC).

Conservation status: Not evaluated.

Uses: Whole plant is used for treating arthritis, rheumatism, lumbago, eye treatment; leaves are used for treating cutaneous and subcutaneous parasites (Burkill, 1985); the leaves are cooked and eaten as a vegetable, also used as dye, tying material and tinder, purgative, abortifacient (Prota, 2024).

6. *Ipomoea batatas* (L.) Lam., Tabl. Encycl. tome 1, 2(2): 465. 1793. *Convolvulus batatas* L., Sp. Pl. 1: 154 (1753). *Lectotype* (designated by Biju 2002: 755): INDIA, Herb. Linn. LINN 77.5 (S).

Perennial herbs, with underground, fusiform to ellipsoid, yellow or reddish edible storage roots, colour depending on cultivar. Stems prostrate, ascending or rarely twining, angular when young, 1–2 mm in diameter, often rooting at the lower nodes, striate, glabrous or glabrescent. Leaves simple, triangular to broadly ovate in outline, entire to 3–5-lobed, palmatifid or palmatisect, 4–14 × 4–16 cm, apex acute to acuminate and mucronate, base truncate or cordate, lobes triangular to lanceolate, glabrous to slightly pubescent on both surfaces; petiole 4–20 (–50) cm long, glabrous or puberulous. Inflorescence axillary cymes: peduncle 3–18 cm long, stout, angular, glabrous or pubescent; bracteoles narrow, oblong, acute, 2–3 mm long, early deciduous. Flowers few: pedicel 3–12 mm long. Sepals subequal, oblong to elliptical-oblong, apex acute and distinctly mucronate, 7–12 mm long, 3–5 mm wide, subcoriaceous, glabrous or pilose on the back and fimbriate, persistent in fruit; outer sepals oblong to elliptic-oblong, 7–12 × 2–3 mm; inner sepals elliptic-oblong or ovate-oblong, 9–12 mm long, 4–5 mm wide. Corolla funnel-shaped, 3–5

cm long, violet or lilac to white, with dark purple center, glabrous. Stamens included; filaments unequal, two longest 8–14 mm long, three shortest 6–9 mm long, widened and pubescent at the base; anthers obloid, 2–3 mm long, base sagittate. Ovary ovoid, 1.5–2 mm long, sparsely pubescent, with long spreading hairs, 4-celled; style filiform, 15–20 mm long, glabrous; stigmas 2-globose. Fruits ovoid, opening by 4-valves, 8–12 mm long; seeds ovoid to irregularly trigonous, 4–7 mm long, black, glabrous.

Vernacular names: *Sweet potato* (English), *patate douce* (French), *lémongho*, *futa* (Mindumu), *lifita* (Bavili), *imongo* (Banzabi), *égwèta* (Ivéa, Mitsogo), *lungu* (Bapunu), *boniato* (Spanish) (Prota, 2024).

Flowering & fruiting: Produces flowers and fruits from August to December (Heine, 1963).

Habitat: Sweet potatoes are grown at low to medium elevations of up to 1,800 m in regions with moderate rainfall or in damp environments. Beyond this altitude, to 2,200 m and higher, it is grown as a fodder crop. Though its precise origin is unknown, this plant is widely cultivated across the tropics. When plants are not cultivated, they are typically found on roadsides close to homes and farms, as well as in abandoned fields (Cartabiano-Leite *et al.*, 2020).

Distribution: Native from Mexico to Venezuela and Ecuador (POWO, 2024). In Ghana: Greater Accra and Eastern regions (Fig. 7). Herbarium records indicate that *Ipomoea batatas* were primarily collected from cultivated areas, with only a small number of specimens found along roadsides, which most likely represent wild populations. This distribution implies that the plant was probably brought to Ghana for cultivation before escaping into the wild and establishing naturalized populations in disturbed habitats such as roadsides.

Specimens examined: GHANA, **Greater Accra region**, Maamobi, 04.05.1976, *J.B. Hall* 43692 (GC); **Volta region**, Kade agricultural research

station, 6°08'28"N, 00°53'56"W, alt. 200 m, 02.10.1996, *H. Schmidt, J. Amponsah & M. Chinto* 2271 (GC).

Conservation status: Data deficient (Rowe *et al.*, 2019).

Uses: The edible roots are roasted, fried, or boiled before consumption; they are processed to make crisps and sweet potato fries (chips); additionally, they provide starch, which is used in Korea to produce *dang myun* noodles; in New Guinea and Southeast Asia, sweet potato leaves are eaten as a vegetable; owing to their lovely flowers and foliage, certain sweet potato cultivars are planted as ornamentals (Carvalho *et al.*, 2023).

7. *Ipomoea blepharophylla* Hallier f., Bot. Jahrb. Syst. 18(1-2): 125. 1893. *Lectotype* (designated by Verdcourt, 1963): SUDAN, **Gr Periba Ghattas**, *Schweinfurth* 1818 (B †; isolecto K [K000097006], P-GA [P00434136!]).

Perennial herbs, on a woody rootstock. Stems several, prostrate, slender, densely hirsute with yellowish appressed hairs. Leaves lanceolate or narrowly oblong-linear, 0–8 × 1.3–2.5 cm, base rounded or subcordate, apex obtuse or mucronate, margin entire, nearly glabrous or with odd hairs on midrib above and margins and veins beneath, ciliate at the apex; petiole up to 1.5 cm long, pubescent. Inflorescences, flowers solitary; peduncle 1.5–2 cm long, pubescent; bracteoles narrowly ovate to lanceolate, unequal in length, c. 3.5 mm long, pubescent; pedicel up to 1 cm long, pubescent, longer in fruit. Sepals unequal, apex acute, covered in long appressed hairs, outer ones shorter, up to 18 mm long and 4 mm wide, pubescent and ciliate, inner ones more narrowly ovate, slightly longer than the inner. Corolla narrowly funnel-shaped, c. 2.5 cm, 3 times longer than sepals, pale or red-purple with darker lines and throat, distinctly narrower below the tube, with long white hairs at the apex of the midpetaline bands. Stamens included; filaments slightly unequal, widened and pubescent at the

base; anther ovoid, 2 mm long, sagittate at the base; disc cup-shaped. Ovary ovoid, glabrous; stigmas 2-globose; style included. Fruits globose, 9–10 mm long, glabrous, apiculate, with persistent style; seeds brownish, 4–4.5 mm with appressed yellowish hairs, tomentose.

Habitat: Grasslands (often seasonally flooded), wooded grassland after burning, secondary forests (dry evergreen) or rocky hills; (550-)1,080–1,860 m (Demissew, 2006; POWO, 2024).

Distribution: Angola, Benin, Burkina Faso, Burundi, Cameroon, Chad, Congo [Brazzaville], Ethiopia, Gabon, Ghana, Guinea, Ivory Coast, Kenya, Mali, Malawi, Mozambique, Nigeria, Rwanda, Senegal, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zaïre, Zimbabwe (COL Checklist, 2022; POWO, 2024). In Ghana: Brong Ahafo, Upper East, Eastern and Volta regions (Fig. 4).

Specimens examined: GHANA, **Upper East Region**, Red volta F.R., Savannah, 24.11.1976, Hall & Swaine 46125 (GC); **Upper East Region**, Zowse, hills near Bawku, Grassland, 08.11.1966, Hall & Enti 35996 (GC); **Volta Region**, 7–8 m on Kete Krachi-atebubu road, 19.12.1956, C.D. Adam 4601 (GC); **Eastern Region**, Jaketi on Afram plains, 01.03.1958, G.K. Akpabla 1876 (GC); **Upper West**, Tumu resthouse, 25.05.1952, J.K. Morton 7564 (GC); **Northern region:** Kpandai Leprosarium, 01.08.1968, J.B. Hall 38753 (GC).

Conservation status: Not evaluated.

8. Ipomoea cairica (L.) Sweet, Hort. Brit. 287. 1826. *Convolvulus cairicus* L., Syst. Nat., ed. 10. 2: 922. 1759. *Lectotype* (designated by Bosser & Heine, 2000): Vesling in Alpino, De Plantis Aegypti, t.74. 1640.

Perennial, climbing, herbs, with enlarged storage roots. Stems twining or prostrate, completely glabrous or shortly pubescent at the nodes, up to 2 cm long, sometimes shallowly muricate. Leaves palmately compound, orbicular, ovate or elliptic in outline, 5–7 lobes, narrowly elliptic,

elliptic or ovate, apex acuminate, base attenuate, outer lobes often bifid, glabrous, 3–10 cm, apex acute or obtuse, mucronulate or attenuate with pseudo-stipules, 5–7 palmately compound, glabrous, at the insertion of the petiole; petiole 2–6 cm long, terete, glabrous. Inflorescences in lax dichotomous cymes: peduncle 5–8 mm long, ramified; bracteoles 1.5 mm long, caducous. Flowers many: pedicel up to 3 cm long, thickening towards the apex. Sepals subequal, ovate, 4–6.5 × 2.5–3 mm, glabrous, sometimes verruculose; the outer ones slightly shorter, obtuse to acute and mucronulate at the apex, membranous and pale along the margins. Corolla funnel-shaped, (3–) 4–6.5 × 4–5 cm, pinkish-mauve, purple, to entirely white, with a purple center, glabrous. Stamens included; filaments unequal, dilated and pubescent at the base; anthers 2.5 mm long, sagittate at the base, pollen pantoporate, spinulose. Ovary 2-locular; style included, c. 18 mm, glabrous. Fruits subglobose, glabrous, 1–1.2 cm in diameter; seeds subglobose or ovoid, 4.2–6 mm long, blackish, densely short-tomentose with long silky hairs along the edges.

Flowering & fruiting: According to the flora of West Tropical Africa, it flowers and fruits all year round (Heine, 1963).

Habitat: Grows primarily in the seasonally dry tropical biome; secondary forest and savannah (POWO, 2024). They can grow up to 350 m above sea-level.

Distribution: Native in Tropical and South Africa, West Indian Ocean, Arabian Peninsula to Temperate East Asia. Introduced in Algeria and a greater part of Tropical South America. In Ghana: Greater Accra region (Legon, Medea), Central (Elmina), Eastern (Suhum) and Northern regions (Bole) (Fig. 2).

Specimens examined: GHANA, **Greater Accra region**, Legon hill, 15.01.1956, C.D. Adams, 3700 (GC); **Central region:** Elmina-Emisano, 01.12.1929, L.O. Deakun 53 (GC); **Eastern**

region, Suhum, 01.12.1951, *J.K. Morton* 6333 (GC); **Northern region**, Bole Banbow, Bole, 01.11.1958, *T.M. Hams s.n.* (GC).

Conservation status: Least Concern (Allen, 2017).

Uses: Most parts of *Ipomoea cairica* have been recorded to be edible; the leaves are eaten when still young, and roots are cooked before consumption. Leaves of the species are also used for treating skin disorders, and seeds are used as laxatives, purgatives and enemas. It is also used medicinally by Zulu people, who make a mixture using crushed leaves and drink it for healing body rashes and fever (Burkill, 1985).

9. *Ipomoea cocsinosperma* Hochst. ex Choisy in DC., Prodr. 9: 354. 1845. *Lectotype* (designated by Verdcourt, 1963: 92): SUDAN, **Kordofan**, *s.d.*, *Kotschy*17(G[G00135555];isolectoG[G00135516, G00023044, G00023045], K [K000097015], MO [MO-2367140], P [P00434153], S [S11-40181], WAG [WAG0000757]).

Perennial, or sometimes annual, herbs. Stems several, stout, suberect to prostrate, up to 3 m long, glabrescent or pilose. Leaves simple, linear-lanceolate to oblong, 2.4–8 × 0.5–2 cm, base cuneate or obtuse, apex subacute to obtuse and mucronate, margin entire, glabrescent or pilose; petioles 0.5–1.2 cm long. Inflorescences cymose; peduncles inconspicuous, up to 5 mm long; bracteoles pilose, linear, inconspicuous, *c.* 4 mm long. Flower: pedicels inconspicuous, up to 5 mm long. Sepals subequal, ovate-lanceolate to lanceolate, *c.* 6 mm long, up to 1.2 cm in fruit, apex long-attenuate, covered with long, white hairs, with hyaline lower margins. Corolla narrowly funnel-shaped, small, only slightly longer than the calyx, red or white, 5–8 mm long. Fruits globose, glabrous, apiculate, with style base persistent, 5–7.5 mm in diam.; seeds brown, shortly pubescent, 3 mm long.

Vernacular names: *ñiñéni*, *manding-bambara* (Senegal) (Burkill, 1985).

Flowering & fruiting: Flowers and fruits between December to May (Roux, 2003).

Habitat: Grows primarily in the Seasonally Dry Tropical biomes (POWO, 2024). They can grow up to elevations of 250 m.

Distribution: Native to Botswana, Chad, Eritrea, Ethiopia, Ghana, Guinea, Kenya, KwaZulu-Natal, Mali, Mauritania, Namibia, Niger, Nigeria, Northern Provinces, Senegal, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe (POWO, 2024). In Ghana: Upper East region (Fig. 4).

Specimens examined: GHANA, **Upper East Region**, Near Bongo, on route to Nangodi, N.T.S., 15.11.1959, *J.K. Morton* A3804 (GC).

Conservation assessment: Not evaluated.

Uses: The whole plant parts are used in traditional medicine and fodder for livestock (Prota, 2024).

10. *Ipomoea delpierrei* DeWild., Bull. Jard. Bot. État Bruxelles 3: 261. 1911. *Type*: DEMOCRATIC REPUBLIC OF CONGO, **Gumban** (Uele), 1904, *Delpierre s.n.* (holo BR [BR0000008884404!]).

Herbs. Stems twining, striate, hirsute with long yellowish hairs. Leaves simple, subtriangular, ovate or cordate, 7.9–9.6 × 6.6–7 cm, base cordate, apex acute to acuminate, lateral nerves 13–14, margins entire to sinuate, densely long pubescent above and strigose beneath; petioles 3–7.4 cm, densely long pubescent, grooved beneath, hirsute as the stems. Inflorescences capituliform, dense head, 3–7-flowered; peduncles 11.8–13.5 cm, densely yellowish hirsute as the stem, enclosed by the bracteoles; bracteoles 2, foliaceous, ovate, 2–4.5 cm long, cordate at the base. Flower sessile. Sepals unequal, shorter than the bracteoles, glabrous outside, denticulate and long ciliate inside, strigose; the outer sepals elliptic, 14–15 mm long; inner ones narrowly oblong-elliptic, 12–13 mm long. Corolla funnel-shaped, 3.5–5 cm, white with dark purple throat; midpetaline bands strigose on the upper portion. Stamens pubescent throughout the length of the filaments, widened at the base, very unequal in length, longer ones 10–13.5 mm, shorter ones 2–4 mm; anther 3–4 mm, sagittate at the base, rounded at the apex. Ovary

ovoid, c. 1.5 mm long, glabrous; style filiform, 15–19 mm. Fruits globose, c. 7 mm in diam., glabrous, 3–4-seeded; seeds trigonous, ovoid or globose, 3–4 mm, dark brown, tomentose.

Flowering & fruiting: Flowers and fruits between December to February.

Habitat: The species grows in woodlands and thickets (Verdcourt, 1963). They can grow up to 350 m above sea level.

Distribution: Native to Cameroon, Central Africa Republic, Ivory Coast, and Democratic Republic of Congo (POWO, 2024). In Ghana: Brong Ahafo region (Fig. 5). New record for Ghana.

Specimens examined: GHANA, **Brong Ahafo region**, Injina road, Berekum, 12.12.1954, J.K. Morton A1035 (GC).

Conservation status: Not evaluated.

11. *Ipomoea eriocarpa* R.Br., Prodr. Fl. Nov. Holland. 484. 1810. *Type:* AUSTRALIA, **New Holland**, Banks & Solander s.n. (holo BM [BM001040629!]).

Annual herbs, on a woody base. Stems prostrate or climbing, slender, up to 1 cm in diam., pubescent to hispid, with a mixture of long and short hairs. Leaves simple, ovate to widely cordate and narrowly linear to oblong-mucronate, 2–10 × 0.8–7 cm, base subhastate with rounded lobes, apex long attenuate to acuminate and mucronate, pilose to strigose, hairs highly concentrated on the midrib and the veins; petiole 1–6 cm long, pubescent. Inflorescences rarely 1, subsessile or short pedunculate; peduncles 1–10 mm long, densely pubescent; bracteoles linear to narrowly ovate-elliptic, 3–8 mm, pubescent. Flower: pedicel c. 5 mm long, pubescent. Sepals subequal, ovate to lanceolate, apex acuminate, 6–8 mm long, hispid to pilose, ciliate, spreading in fruit, inner sepals slightly narrower. Corolla tubular to funnel-shaped, pink-purplish or rarely white, 6–9 × 13 mm, midpetaline areas pilose. Stamens included; filaments inserted at the base of the corolla, glabrous; anthers globose, 1 mm long;

disc 0.4 mm high, pubescent. Ovary obpyriform, 2.5 mm high, hirsute, 2-locular, 4-celled; style distinctly articulate, 4 mm long; stigma 2-globose. Fruits ovoid-globose to globose, 5–6 mm in diam., pubescent, apiculate, with persistent style; seeds black-grey, trigonous-globose, 2.5 mm long, glabrous, finely punctate.

Vernacular names: *manding-bambara gabi* (Senegal), *manding-mandinka* (Gambia), *mende kpokpo* (Sierra Leone), *tiny morning glory* (English), *umurandaranda* (Kirundi) (Prota, 2024).

Flowering & fruiting: Flowers and fruits between November to January (Heine, 1963).

Habitat: Reported to be growing on grassland, hedgerows, waste spaces, cultivated ground, often on clay soils at altitudes of 0–1,350 m (Verdcourt, 1963); in Ethiopia, also in woodland habitat (*Combretum-Terminalia-Anogeissus* woodland), up to 1,700 m (Demissew, 2006).

Distribution: Native to tropical regions in Africa, Australia, Asia and Saudi Arabia. Introduced in Oman, Puerto Rico, Réunion, Windward Islands, Yemen (POWO, 2024). In Ghana: Upper West, Northern, Eastern, Brong Ahafo, Eastern and Volta regions (Fig. 4).

Specimens examined (selected): GHANA. **Eastern region**, Afram Mankrong F.R, 19.12.1957, C.D. Adams 4951(GC); Mt. Ejuanema, Kwahu, 2200 m, 25.12.1957, C.D. Adams 5145 (GC); **Northern region**, Pong Tamale, Veterinary Dept., 27.11.1935, G.K. Akpabla 378 (GC); Yendi, 12.12.1951, Adams & Akpabla 4053 (GC); Bole, 01.01.1958, T.M. Harris 955 (GC).

Conservation status: Not evaluated.

Uses: Seed oil from *I. eriocarpa* is used to treat skin diseases and dermal eruptions, arthritis and rheumatism (Burkill, 1985). Used in soups or mixed with other foods, including other *Ipomoea* species (Nigeria); in Tanzania and India, the leaves are boiled and eaten as vegetables; the seeds have unspecified medicinal use in Gambia;

subsequently, the oil extract of the plant is used in India for external application in headache, rheumatism, leprosy, epilepsy, ulcers and fevers (Prota, 2024).

12. *Ipomoea hederifolia* L., Syst. Nat., ed. 10. 2: 925 (1759). *Lectotype* (designated by O'Donell, 1959: 48): Illustration of *Ipomoea foliis cordatis* in Plumier in Burman, Pl. Amer. 4: 82, t.93, f.2. 1756.

Annual herbs. Stems twining, slender, ramified, slightly angular, glabrous or sparsely pilose. Leaves simple, rarely 3-lobed, ovate to orbicular in outline, 2.2–8.3 × 2.1–8 cm; petioles 3–13 cm, glabrous to sparsely pubescent; base cordate, apex acuminate and mucronate, margin entire, angular, coarsely dentate or deeply 3-lobed, glabrous to sparsely pubescent. Inflorescences axillary cymes: peduncle 1.3–16(–20) cm long, angular, glabrous to pubescent; bracteoles ovate, 1.5–2 mm, long mucronate. Flowers 1–few: pedicel 0.3–1.2 (–5) cm. Sepals slightly unequal, oblong-elliptic, 3–4 mm long with a prominent awn, 2–4 mm long, straight or slightly reflexed. Corolla hypocrateriform, red scarlet, glabrous, limb 2–2.5 cm in diam., shallowly 5-lobed; tube 2.8–4 cm long, narrowed below, slightly curved. Stamens exserted; filaments c. 4 cm long, slightly widened at the base and covered with glandular hairs; anthers 2 mm long. Ovary ovoid, glabrous, 2-locular, 4-celled; style c. 4.5 cm long; stigmas 2-globose. Fruits globose, 5–7 mm in diameter, surrounded at the base by the persistent sepals, opening by 4-valves; seeds trigonous, black, 3–4 mm long, densely pubescent.

Flowering & fruiting: Flowers and fruits from November to February (Heine, 1963).

Vernacular names: *liseron hallier* (French), *trompetica roja* (Spanish), *fue kula* (Tongan), *amarra-amarra*, *corda-de-viola*, *batatarana*, *corriola* (Portuguese) (Burkill, 1985).

Habitat: Found growing in waste places, thickets, cliffs, and locally established in riverine forest, roadsides, cultivated fields and disturbed areas.

They can grow up to 100 m above sea-level.

Distribution: Native of tropical and subtropical America from the Southern United States to Argentina, now widely naturalized throughout the tropics. In Ghana: Central region (Fig. 6).

Specimens examined: GHANA. **Eastern region**: Bunso, [6°16'47" N, 00°27'44" W], 17.11.1995, H.H. Schmidt 1753 (GC); **Eastern region**: Agogo, 21.12.1928, L.O. Deakin, 8 (GC); **Central Region**: Assuantsi. 9.02.1928, T.W. Williams 1401 (GC).

Conservation status: Not evaluated.

Uses: Roots are scraped and used as a remedy for stomach-ache; modified stems are also used to treat intestinal parasites (Rojas-Sandoval, 2016).

13. *Ipomoea heterotricha* Didr., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1854: 220. 1854. *Lectotype* (designated by Mwanga-Mwanga, Sosef & Simoes, 2022: 96): GUINEA, *Mortensen s.n.* (C [C10004084]; isolecto C [C10004083]).

Annual herbs. Stems twining, terete, densely covered in hirsute, long, yellowish indumentum, associated with a layer of greyish, shorter, hairs. Leaves simple, ovate to subtriangular or cordate, 4–7.8 × 2.4–6.1 cm, base cordate to truncate, apex acute to acuminate, margin entire, densely yellowish pubescent above, with long silver dense hairs beneath; petiole 1.7–3.4 cm long, densely hirsute as the stem. Inflorescences capituliform, dense, enlarged by persistent, enlarged, bracteoles; peduncle 2.9–4.6 cm, yellowish hirsute as the stem; bracts several, oval-elliptic to narrowly oblong, 15–30 × 5–8 mm, pilose as the leaves, the external face long hirsute. Flower: sepals subequal, c. 9 mm long, shorter than the bracteoles, linear-lanceolate, apex acute, densely pubescent on both faces, strongly yellowish hirsute on the outside, as the bracts, towards the base, hirsute with silver hairs towards the apex; corolla funnel-shaped, white to pink with dark purple centre; stamens inserted, unequal, filaments 5–6 mm long, anther basifixed, ovoid, 1.8 mm long, sagittate at the base; ovary conical to ovoid, 2-locular, 5–6 mm long,

glabrous; style filiform, 9–13 mm. Fruit ovoid, 5–6 mm, glabrous; seeds ovoid, 3–4 mm, black, finely yellow pubescent.

Flowering & fruiting: Flowers and fruits between December to February, based on examined specimens.

Habitat: Found in open or dense *Combretum-Anogeissus leiocarpus* woodland or deciduous woodland; in Ethiopia, it can be found at 550–600 m altitude but extended to 435–1200 m altitude range in other countries; it can also be found in the undergrowth, woodland edge, wet grassland, rivers, and near waterfalls (Gonçalves, 1987).

Distribution: Angola, Burundi, West Africa except Liberia, Central African Rep., Chad, Congo, Ethiopia, Kenya, Malawi, Rwanda, Senegal, Sudan, Tanzania, Uganda, Zambia, Zaïre, and Zimbabwe (POWO, 2024). In Ghana: Northern, Volta and Brong Ahafo regions (Fig. 5).

Specimens examined: GHANA, **Brong-Ahafo Region**, between Wenchi and Sunyani, 06.02.1995, C.C.H. Jongkind 2028 (GC); *ibid.*, 05.12.1995, H.H. Schmidt, J. Amposah & A. Welsing 1919 (GC); **Eastern region**, Mankrong, Kwahu, 23.12.1957, C.D. Adams 5066 (GC); **Northern region:** Larabang-Wa road, c. 2 km, 9°13'19"N, 01°52'17"W, 140 m, 01.12.1995, H.H. Schmidt, J. Amposah & A. Welsing 1888 (GC).

Conservation status: Not evaluated.

14. *Ipomoea imperati* (Vahl) Griseb., Cat. Pl. Cub. 203. 1866. *Convolvulus imperati* Vahl, Symb. Bot. 1: 17. 1790. *Type:* Imperato, Hist. Nat., éd. 2: 671. 1672.

Perennial, fleshy, stoloniferous, herbs. Stems prostrate, sometimes twining, terete, glabrous, rooting at the nodes. Leaves simple, very variable in shape and size, particularly on the same plant, linear, lanceolate to narrowly elliptic-oblong or ovate, sometimes shallowly 3–5-lobed, 1.5–14 × 1.5–3.5(–6.5) cm, apex bilobed, emarginate, obtuse to acute or mucronate, base rounded to

truncate or cordate, margins entire to undulate; petioles 0.5–4.5 (–5) cm, glabrous or less often puberulent at the apex. Inflorescences: peduncle 0.6–1.9 cm; bracteoles very narrowly elliptic-oblong to linear or subulate, 2–4 mm long. Flower: pedicel 2.1–4.3 cm; slightly club-shaped. Sepals unequal, oblong, obtuse to shortly cuspidate at the apex, subcoriaceous; outer ones shorter, 8–9 mm long; inner ones longer, 10–11 mm long. Corolla funnel-shaped, 3.9–5 cm long, white, yellowish on the inside, with a dark purple center, glabrous. Stamens unequal; longer filaments 8–10 mm, shorter filaments 5–6 (–7) mm, puberulent at the base; anthers pale yellow, 3–4 mm long. Ovary ovoid, 2-locular, 2.2–2.5 mm high, glabrous; style filiform, 12–13 mm long. Fruits ellipsoid to subglobose, dehiscent by 4 valves, glabrous; seeds ovoid-trigonous, 4–5 mm long, tomentose with greyish silky hairs.

Vernacular names: *beach morning-glory* (English) (CABI, 2019).

Flowering & fruiting: Flowers and fruits between May to August (GBIF, 2022).

Habitat: *Ipomoea imperati* grows on coastal flats, beaches, windward and leeward slopes of dunes, up to 100 m (CABI, 2021).

Distribution: Tropical and subtropical coasts (POWO, 2024). In Ghana: Greater Accra and Western regions.

Specimens examined: GHANA, **Greater Accra region**, Accra, 02.05.1966, T.W. Poroun 399 (GC); Medea, 21.05.1953, D.W. Woodall 15588 (GC); Labadi, 16.10.1963, J.K. Botokro 47356 (GC); Accra Sea Coast, 13.10.1899, T.W. Brown 399 (GC); Near beach, West of Accra, 5°30'06"N, 0°20'42"W, alt. 5 m, 26.11.1994, C.C.H. Jongkind, D.K. Abbiw & C.M. Markwei 1898 (GC).

Conservation status: Not evaluated.

Uses: The plant is used in folk medicine for the treatment of inflammation, swelling and wounds, as well as to treat pains after childbirth and for

stomach problems (De Paula–Zurrón *et al.*, 2010).

15. *Ipomoea indica* (Burm.) Merr., *Interpr. Herb. Amboin.* 445 (1917). *Lectotype* (designated by Fosberg, 1976: 38): Besler, *Aest. Ord.* 13, fol. 8. II. 1613.

Perennial herbs. Stems twining or prostrate, 1–1.5 mm in diam., rooting at the nodes, pubescent with retrorse hairs, subligneous at the base. Leaves simple; lamina ovate, entire or 3-lobed, 5–12 × 3–15 cm, cordate at the base, apex acuminate, pilose to glabrescent on both surfaces, more densely pubescent below; petiole 2–10 cm long, pubescent. Inflorescences: peduncle 0.5–15 cm long; bracteoles linear to lanceolate, or ovate-lanceolate. Flower: pedicel 2–10 cm long, pubescent like the stem. Sepals subequal, lanceolate, apex caudate, acuminate, 1.5–2.3 cm long, herbaceous, glabrescent, persistent in fruit; outer sepals ovate, apex long acuminate, 9–12 mm long, pubescent; inner sepals narrower. Corolla funnel-shaped, 5–8 cm long, blue or mauve-purple, often red-tinged; tube whitish at the base; limb flaring, glabrous, lobes broadly rounded, notched at apex. Stamens 5, included; filaments unequal, 17–30 mm, broadened and hairy at the base; anthers oblong, 3.5–5 (–5.3) mm long; pollen spinulose, pantoporate; disc annular, lobed. Ovary ovoid, 3-locular, 1–1.5 mm long, glabrous; style filiform, 30–33 mm long, glabrous; stigmas 2-globose. Fruits ovoid-globose, opening by 3 valves, 8–10 mm in diameter, glabrous; seeds 6, ovoid to ellipsoidal, 4–6 mm long, brown-black, covered with an appressed pubescence.

Vernacular names: *blue dawn morning-glory*, *ocean-blue morning-glory* (English) (Mwanga- Mwanga *et al.*, 2022).

Flowering & fruiting: It flowers in most months of the year (Wood *et al.*, 2015).

Habitat: Found in roadside thicket sand along the borders of moist woodlands. They can grow up to elevations of 400 m.

Distribution: Native to tropical and subtropical

America, cultivated as ornamental or escaped from cultivation elsewhere. In Ghana: Greater Accra and Eastern regions (Fig. 7).

Specimens examined: GHANA, **Greater Accra region**, Accra Plains, 15.10.1954, *G.K. Aghemaheie* 679 (GC); Christiansborg, 17.10.1954, *F.W. Engmann* 709 (GC); **Eastern region**, Koforidua, 6° 16'47" N, 00° 27'44" W, alt. 150m, 17.10.1995, *H. H. Schmidt, J. Amponsah & A. Welsing* 1751 (MO, GC); Larteh, 18.10.1900, *W. H. Johnson* 822 (GC).

Conservation status: Not evaluated.

Uses: Cultivated as ornamental, sometimes escaped from cultivation or subsponaneous (Mwanga- Mwanga *et al.*, 2022).

16. *Ipomoea intrapilosa* Rose, *Gard. & Forest* 7: 367 (1894). *Lectotype* (designated by McPherson, 1981: 532): MEXICO, **Jalisco**, *s.d.*, *E. Palmer* 703 (US [US00111405!]; isolecto BM [BM000953192], GH [00054521], K [K000612776], MEXU [MEXU00025494]).

Perennial shrubs or trees, 3–10 m high. Stems light coloured, up to 50 cm in diameter. Leaf blade green, lanceolate to narrowly ovate, 7–14 × 3–5.5 cm, rounded, acuminate, entire, glabrous or sparsely pubescent on the lower surface near the base of the midrib, 10–17 lateral veins on each side of the midrib, sometimes bi-glandular at the base of the midrib; petiole pale green, 3–9 cm long, glabrous. Inflorescences pedunculate, peduncle 0.4–2 cm long, glabrous; bracteoles ovate to oblong, 3–6 × 1–2.5 mm, glabrous on both surfaces and pubescent within, caducous. Flower: pedicel 1.8–5 cm long, glabrous. Calyx ovate, 13–19 × 7–13 mm, coriaceous, obtuse or obtuse-mucronate and acute at the apex, abaxial surface glabrous and adaxial surface with soft, straight appressed hairs. Corolla white or yellowish white, 5–8 × 5–7 cm, the tube and the interplical regions greenish yellow, funnel, glabrous or sparsely pubescent along the margins of the inter apical regions. Stamens included; filaments 3–4 cm long; anthers 8–10.5 mm long, basal hairs up to 2.5

mm long. Ovary 2-locular, 4-ovuled; style 3.5–4 cm long; stigmas 2, globose to slightly elongate, 1 mm long. Fruits opening by 4-valved, 2–2.5 cm long; seeds pilose, with long hairs on the margins, 10–15 mm long.

Vernacular names: *Cazahuate*, *cazahuate blanco* or *palo blanco* (Spanish).

Flowering & fruiting: Flowers and fruits between October and April.

Habitat: Dry shrublands in central Mexico, oak forests and tropical deciduous woodlands; altitude from 900–2200 m.

Distribution: Native to Mexico, introduced, cultivated or escaped from cultivation elsewhere. In Ghana: Eastern region, Greater Accra region. New record for Ghana.

Specimens examined: GHANA, **Greater Accra region**, Botany Department, University College, Achimota, 21.11.1959, *G.K. Akpabla* 490 (GC); **Eastern region**, Aburi Botanical Garden, 25.05.1976, *Hall, Lock & Abbiw* 45849 (GC).

Conservation status: IUCN has formally assessed this species as Least Concern (Salas et al., 2020).

Uses: Ornamental and medicinal. (Osuna et al., 1996; Bah et al., 2007; Wood et al., 2020).

17. *Ipomoea involucreata* P.Beauv., Fl. Oware 2: 52, t. 89. 1816. *Type:* NIGERIA/BÉNIN, **Oware**, *Palisot de Beauvois s.n.* (holo G [G00023040!]).

Annual or perennial herbs. Stems creeping or climbing, densely hirsute with yellowish hairs, to glabrescent. Leaves simple, ovate, 2–8 × 1.5–7 cm, base cordate, apex attenuate-acuminate to obtuse, mucronate, base cordate, glabrous to densely tomentose on both surfaces; petiole 1.3–8 cm long, pubescent. Inflorescences in dense heads, enclosed within a bracteal involucre; peduncles 2–12 (–16) cm, pubescent; outer bracteoles connate into large pubescent foliaceous boat-shaped involucre, with 2 cups, 3–6 × 0.8–1.5 cm, green, pubescent, inner bracteoles small, linear-oblong to obovate, 1.5–2 × 0.2–0.4 cm, acute to aristate at the apex. Flower:

pedicel 1.5–3 mm, pubescent. Sepals narrowly elliptic, glabrescent to densely pubescent; outer ones lanceolate and acute, 6–15 × 4 mm; inner ones ovate, shorter. Corolla funnel-shaped, purple, rose-red, mauve, white or white with dark purple centre, 3–5 cm long, midpetaline bands pilose on the outside. Stamens unequal, the longer ones 10–15 mm, the shorter ones 5–7 mm, widened and pubescent at the base; anthers white, 1.7–2 mm, sagittate at the base. Ovary ovoid, c. 1 mm, glabrous; style 8–13 mm; stigmas 2, white, globose. Fruits globose, opening by 4 valves, 6 mm wide, glabrous; seeds pubescent or glabrous, 3.5–4 mm long, blackish, glabrous to shortly pubescent.

Flowering & fruiting: Flowers and Fruits all year round, especially from July to December (Heine, 1963).

Habitat: Creepers on the roadside of the main road. They can grow up to 500 m above sea-level.

Distribution: The native range of *I. involucreata* is tropical and South Africa (POWO, 2024). In Ghana: Eastern, Greater Accra, Ashanti, Western, Oti, Central and Volta regions (Fig. 5).

Specimens examined (selected): GHANA, **Ashanti region**, Atewa range, 6°14'30"N, 0°32'30"W, 08.07.1994, *C.C.H. Jongkind, D.K. Abbiw & C.M. Markwei* 1561 (GC); **Western region**, Amenfi east, Akropong, 25.08.1898, *W.H. Johnson* 154 (GC); Ankasa Forest Resource Reserve, Ankasa based camp to Nkwanta guard camp, c. 5.0 km., 5°13'06"N, 2°39'06"W, alt 150–230 m, 13.02.1999, *H.H. Schimdt, J. Stone, J. Amponsah & M. Chintoh* 3383 (GC); **Oti region**, Kete Krachi, Mpuse to, 01.12.1951, *J.K. Morton* 6430 (GC); **Central region**, Cape Coast, 30.05.1962, *J.B. Hall* 2328 (GC).

Conservation status: Not evaluated.

Uses: The leaf sap is used as abortifacients and for the menstrual cycle; the seeds are used as laxatives, purgatives and enemas; the leaves are used in Medicine for treating pulmonary ailments; the leaves and roots are used as food, either cooked or

uncooked (Burkill, 1985).

18. *Ipomoea mauritiana* Jacq., *Collectanea* 4: 216. 1791. *Type*: Iconotype, Jacquin, *Pl. Hort. Schoenbr.*: t. 200. 1797.

Annual, climbing herbs, with enlarged storage roots. Stems prostrate, often woody in the lower parts, cylindrical, more or less fistulose, muricate, with faint longitudinal ridges, ramified, glabrous. Leaves deeply palmately lobed, suborbicular in outline, 7–18 × 6–17 cm, base cordate, apex acuminate or obtuse and mucronulate, 5–7 lobed, the outer lobes sometimes bifid, margin entire, overall glabrous except puberulent below, near the base or sparsely pubescent along the main veins; petiole 3–15 cm long, glabrous or muricate. Inflorescences puberulent; peduncle cylindrical or slightly angular, 2.5–20 cm long; bracteoles oblong, caducous, 1–2 mm. Flower: pedicel cylindrical, 1.5–4.5 cm long, glabrous. Sepals subequal, suborbicular to broadly elliptic, 6–7 mm long, imbricate and appressed to the corolla tube, rounded to obtuse at the apex, coriaceous, margin hyaline, glabrous. Corolla funnel-shaped, 5–8 cm long, bright pink to whitish, with a purple darker center, glabrous, with a broad cylindrical tube, gradually opening up towards the apex, often with lobes deeply marked and spreading. Stamens included; filaments up to 2 cm long, widened and pubescent at the base; anthers 3–4 mm long, white, sagittate at the base. Ovary conical, 2-locular, glabrous; style filiform, puberulous. Fruits ovoid, 10–15 × 8–15 mm, obtuse at the apex, 2-locular, glabrous; seeds 5–7 mm, black, covered in long white silky hairs.

Vernacular names: *finger-leaf morning-glory* (English), *loviaton* (Pèdah), *akar lanar* (Malay), *kamkamôte* (Philippines) (Prota, 2024).

Flowering & fruiting: Produces flowers all year round (Heine, 1963).

Habitat: Growing primarily in the seasonally dry tropical biome; scattered throughout the tropics but rarely abundant (POWO, 2024). They can

grow up to 150 m above sea-level.

Distribution: Native in Tropical America and Africa, introduced in other tropical and subtropical regions (POWO, 2024). In Ghana, widespread: Greater Accra, Ashanti, Brong Ahafo, Volta, Eastern, Northern and Central regions (Fig. 2).

Specimens examined (selected): GHANA, **Greater Accra region**, Legon Hill, 11.12.1955, *C.D. Adams* 3587 (GC); **Ashanti region**, Atewa Range F.R., alt. 2600', 13.05.1967, *Enti & Jenik* 36454 (GC); **Brong Ahafo region**, Yeji on the Tamale Road, 13.08.1963, *M. Ansa-Emmim & S.K. Adom-Boafo* 245 (GC); **Volta region**, Chai River Forest Reserve, 8°06'N, 0°24'E, Alt 400 m, 22.05.1996, *C.C.H. Jongkind & C.M.J. Nieuwenhuis* 2806 (GC); **Eastern region**, Asamankese roadside, 01.01.1929, *E.D. Plumptre* 72 (GC).

Conservation status: Not evaluated.

Uses: The plant is extensively used across Asia, especially for medicinal purposes: in Peninsular Malaysia, the root is pounded and applied to swellings; in India and the Philippines, the root is considered tonic, alterative, aphrodisiac, demulcent, lactagogue and cholagogue, and is used for fever and bronchitis; the powdered root is given for diseases of spleen and liver, for menorrhagia, debility and fat accumulation. In India, the seeds are also used for coagulating milk. The plant is also grown for ornamental purposes, and as a fodder for cattle (Prota, 2024).

Notes: An American plant now widely distributed in the tropics of the Old World; naturalized in waste places and residential areas.

19. *Ipomoea nil* (L.) Roth, *Catal. Bot.* 1: 36. 179). *Lectotype* (designated by Verdcourt, 1957: 232–233): Iconotype, Dillenius, *Hort. Eltham.* 96, t. 80, f. 91. 1732.

Annual herbs. Stems twining, terete, 1 mm in diam., pubescent with bristly simple whitish hairs. Leaf simple, entire or 3-lobed, ovate to circular in outline, 4–14 × 3–13.5 cm, apex acuminate, base

cordate, pubescent with appressed whitish simple hairs on both surfaces, denser below; petiole 1.5–4 cm long, densely villose with bristly simple whitish hairs. Inflorescence: peduncle 2–10 cm long, densely hirsute with whitish hairs; bracteoles linear to filiform, 5–8 mm long. Flower: pedicel 5–10 mm long, with similar pubescence to the peduncle. Sepals subequal, linear-lanceolate, 15–28 × 3.5 mm wide, densely pilose with spreading hairs, persistent in fruits. Corolla funnel-shaped, (4–) 5–6 cm long, blue to mauve with paler tube, often white inside, glabrous. Stamens included; filaments unequal, the longest 20–22 mm long, the shortest 12–15 mm long, widened and pubescent with long hairs at the base; anthers oblong, base sagittate, 3 mm long. Ovary ovoid, 3-locular, glabrous; style filiform; stigmas 2-globose. Fruits ovoid to globose, 8–12 mm long, opening by 3 valves, glabrous, surmounted by the persisting base of the style, enclosed by the calyx; seed obovoid-trigonal, 4.5–6 mm long, black, puberulous with fine greyish hairs.

Flowering & fruiting: Flowers and Fruits from September to December (Heine, 1963).

Habitat: A climbing annual, growing primarily in the seasonally dry tropical biome (POWO, 2024). They can grow up to elevations of 400 m.

Distribution: Native in tropical and subtropical America (POWO, 2024), cultivated as ornamental, or escaped from cultivation elsewhere. In Ghana: Greater Accra and Brong Ahafo regions (Fig. 7).

Specimens examined: GHANA, **Greater Accra region**, LaNkwantanang Madina, Legon Botanical Gardens, 19.10.1969, A.A. *Enti* 42762(GC); *Ibid.*, 25.10.1961, J.K. Morton 5010 (GC); *Ibid.*, 16.10.1965, M. Abedi Lartey MAL/1(GC); **Ashanti region**, Bobiri F.R., 24.10.1963, A.A. *Enti* 35246 (GC).

Conservation status: Not evaluated.

Uses: The seeds of *Ipomoea nil* are used as laxatives and purgatives (Burkill, 1985). In Indonesia, *Ipomoea nil* has environmental and social uses as

animal food, poison and medicine and for food (POWO, 2024).

20. *Ipomoea obscura* (L.) Ker Gawl., Bot. Reg. 3: t. 239. 1817. *Lectotype* (designated by Meeuse, 1958: 746): Iconotype, Dillenius in Hort. Eltham.: tab. 83, fig. 95. 1732.

Perennial herbs. Stems prostrate to twining, filiform, cylindrical, nearly woody at base, pilose or glabrescent. Leaves entire or slightly undulate, ovate, rarely linear-oblong, 2.5–8.5 × 0.4–7.5 cm, cordate with rounded auricles at the base, acuminate or apiculate and mucronate at the apex, margins often ciliate, membranous, pubescent or glabrescent on both surfaces; petiole slender, pubescent or glabrescent, 1–11 cm long. Inflorescences 1–4 (–5.5) cm long; peduncle 1–8 cm long, slender, glabrous, pubescent or thinly pilose; bracteoles triangular, acute, 1–2 mm long. Flower: pedicel 1–2 cm long, at first erect but in fruit relaxed and thickened towards the apex, sometimes minutely verrucose, glabrous or less commonly, pubescent or pilose. Sepals subequal, ovate, ovate-orbicular, ovate-lanceolate or lanceolate, apex acute or apiculate, 4–8 mm long, 1.7–4 mm long, often wrinkled or muricate, margin scarious, glabrous or pilose with long white trichomes, in fruit all somewhat accrescent, ultimately often spreading or reflexed, two outer sepals shorter, ovate, apex acute to shortly acuminate or mucronate, inner sepals ovate-elliptic, apex obtuse, occasionally mucronate. Corolla funnel-shaped, 1.5–2.5 cm long, yellow, orange, cream or white, with or without a dark purple centre, often weakly lobed, 3–4 cm in diameter, midpetaline bands sparsely pubescent at the apex. Stamens included; filaments unequal, two longer, three shorter, widened and pubescent at the base; anthers ovoid, base sagittate, 2–3 mm long. Ovary elongated to rounded, distinctly prolonged at apex, 2.8–5 mm long, glabrous, 2-locular, 4-ovuled; style filiform, 7–8 mm long, glabrous; stigmas 2-globose. Fruits globose-ovoid, 7–12 × 5–10 mm, glabrous, crowned by

persistent style base; seeds ovoid, black, appressed pubescent, 4–5.5 mm long.

Vernacular names: *ododo oko*, *ododo owuro* (Nigeria: Yoruba); *Ògbànanì* (Nigeria: Igbo) (Burkill, 1985).

Flowering & fruiting: Flowers and Fruits from October to March (Heine, 1963).

Habitat: In forests, shrub lands, and rocky areas, e.g., inland cliffs or mountain peaks at 500–2,200 m altitude (Demissew, 2006; Shimpale *et al.*, 2012).

Distribution: Native to tropical and subtropical regions of Africa and Asia. In Ghana: Western, Central and Greater Accra regions (Fig. 8).

Specimens examined: GHANA, **Greater Accra region**, between Achimota and Little Legon, 14.10.1955, *C.D. Adams* 3324 (GC); Legon village, 01.03.1931, *F.R. Irvine* 1598 (GC); Ayikuma to Shai Hills Road, 04.12.1952, *J.K. Morton* 8069 (GC); on top of Shai Hills, 8.01.1953, *J.K. Morton* 8274 (GC); **Upper West region**, Wa South, 25.05.1950, *C.D. Adams* 794 (GC).

Conservation status: IUCN has formally assessed this species as Least Concern (Allen, 2017).

Uses: The leaves are eaten as food (Burkill, 1985); it is also a widely cultivated ornamental (Allen, 2017).

21. *Ipomoea pes-caprae* (L.) R.Br. in J.H. Tuckey, Narr. Exped. Zaire: 477. 1818. *Convolvulus pes-caprae* L., Sp. Pl. 159. 1753. *Lectotype* (designated by St. John, 1957: 65): Rheede, Hortus Ind. Malab. 11: t. 57.

Perennial herbs, woody at the base, glabrous, containing an abundant white sap. Stems stoloniferous, prostrate, fistulose, often purplish, glabrous to slightly puberulent. Leaves erect, slightly succulent, suborbicular to square-shaped, 3–10.5 × 3–12 cm, apex emarginate and mucronate or truncate, sometimes lobed, base cuneate to rounded or cordate, glabrous or very sparsely puberulent on both sides, margins entire; petiole 2–17 cm long, purplish, glabrous. Inflorescences: peduncle angular or flattened,

3–16 cm long, glabrous; bracteoles caducous, elliptic-ovate to narrowly elliptic-ovate, 3–3.5 mm. Flower: pedicel 1.2–4.5 cm long, glabrous. Sepals unequal, glabrous, the outer ones ovate to slightly elliptic, mucronate, 6–10 mm long, distinctively 3–5-nerved, the inner ones larger, 8–15 mm long. Corolla funnel-shaped, pink or red purple with darker purple centre, 3–6 cm long, glabrous. Stamens unequal; filaments 5–9 mm long, widened and pilose at the base; anthers 4–4.5 mm long, sagittate at the base. Ovary globose to ovoid, 2–2.5 mm, 2-locular, glabrous; style 12–20 mm; stigmas 2, globose. Fruits globose, 12–18 mm long, 4-seeded or more, opening by 4 valves, glabrous; seeds black, trigonous-globose, 6–10 mm long, densely brownish tomentose.

Vernacular names: *bababarakora* (Senegal: Madingue), *npiti* (Nigeria: Yoruba), *batatilla* (Dominican Republic), *bay hops*, *bay winders* (Bahamas), *bejuco de playa* (Puerto Rico), *boniato de playa* (Cuba), *patate lan mer* (Dominican Republic), *patate marron* (Haiti), *Goat's foot Convolvulus* (English), *bejuco de playa* (Spanish), *pied de chèvre* (French) (Prota, 2024).

Flowering & fruiting: Flowers and Fruits between December to March (Heine, 1963).

Habitat: *Ipomoea pes-caprae* is a pioneer coloniser of sand-dunes occurring throughout the seaboard of tropical regions (Prota, 2024). They can grow up to 100 m above sea level.

Distribution: Tropical and subtropical coasts (POWO, 2024). In Ghana: Greater Accra and Western regions.

Specimens examined (selected): GHANA, **Greater Accra region**, Near Labadi Lagoon, Shrub vegetation, 01.01.1933, *F.R. Irvine* 1962 (GC); Labadi beach, 23.01.1954, *W. Woodall* 16640 (GC); **Western region**, Beach near Axim, Shrub vegetation, 01.03.1934, *F.R. Irvine* 2565 (GC).

Conservation status: IUCN has formally assessed this species as Least Concern (Bárrios & Copeland, 2021).

Uses: The leaves are used to treat skin diseases (Burkill, 1985). The leaves are eaten as vegetables in Zanzibar, and also used for fodder/forage for pigs and cows in China; pulped leaves are rubbed on fishing nets in Malawi as a lure to entice the fish to enter. Extract from the stems used for strong anti-tumour action; leaves used as anodynal in rheumatism and emollient on ulcerous and other sores, diuretic and laxative (Brown & Frank, 2023).

22. *Ipomoea pyrophila* A.Chev., Bull. Mus. Natl. Hist. Nat., Ser. II. 5: 235. 1933. *Type:* MALI, **Koundian**, *Chevalier* 421 (P [P00434165!]).

Geophytic, slender trailing herbs; woody rootstock. Stems prostrate or climbing, densely covered in yellowish indumentum. Leaves simple, oblong-ovate to broadly lanceolate, (1.4–) 2.5–5 × 1.2–2.2 cm, apex retuse to obtuse and rounded, sometimes mucronate, base auriculate, sparsely yellowish pubescent above, trichomes appressed to the leaf surface, densely white and yellowish tomentose below, with hairs concentrated on the veins and midrib; petiole 1.7–3 cm long, curved, densely pubescent with yellowish indumentum. Inflorescences: peduncle (1.1–) 1.3–5.2 cm, densely tomentose, with whitish spreading hairs; bracteoles narrowly elliptic to linear, up to 7 mm, pubescent. Flower: pedicels 3–6(–13) mm long, slightly thicker than the peduncle, with similar pubescence. Sepals subequal, lanceolate to oblanceolate, slightly narrower at the base, densely white tomentose; outer ones 6–10(–12) × 4–8 mm; inner ones 6 × 1.5–2 mm. Corolla funnel-shaped, up to 2.8 cm long, rosy-purple to pale violet with white lobes, sparsely pubescent on the outside. Stamens included; filaments unequal, two longer ones of 9 mm, three shorter ones of 7 mm, gradually widening and weakly pubescent at the base. Ovary globose; style included, c. 14 mm long, glabrous; stigmas 2-globose. Fruits globose, opening by 4-valves, 5–6 mm in diameter, glabrous; seeds pubescent, 3 mm long.

Flowering & fruiting: Flowers and Fruits from

March to June (Heine, 1963).

Habitat: In savanna woodland after fires and in sub-montane forest margins. They can grow up to 450 m above sea level.

Distribution: West and Central Africa. In Ghana: Upper Eastern and Northern regions. New record for Ghana.

Specimens examined: GHANA **Northern region**, Top of Damongo Scarp, Savannah woodland, 27.03.1953, *J.K. Morton* 8726 (GC); **Upper Eastern region**, On top of Gambaga hills, Savannah woodland, 05.05.1953, *J.K. Morton* 8967 (GC).

Conservation assessment: Not evaluated.

23. *Ipomoea quamoclit* L., Sp. Pl. 1: 159-160. 1753. *Lectotype* (designated by Biju, 2003: 755): NETHERLANDS (cultivated), *Clifford s.n.* (BM [BM000558077!]).

Annual herbs. Stems twining or prostrate, slender, angular, longitudinally ridged, glabrous. Leaves pinnately compound, ovate to oblong in outline, 3.5–10 × 3–6 cm, glabrous, leaflets 8–19 per leaf, opposite to nearly so, linear to filiform, the two lower ones reflexed and bifid, glabrous; petiole 1–4 cm long, glabrous, with two leaf-like, subsessile, pseudo-stipules at the base. Inflorescences: peduncle slender, 3–8 cm long, glabrous; bracteoles deciduous, triangular, 1–3 mm long. Flower: pedicel 1–2.5 (–4.2) cm long, slightly thickened at the apex, glabrous. Sepals unequal, oblong to ovate-elliptic, apex obtuse and mucronate, glabrous, outer ones oblong, 4–5 mm long, inner ones ovate-elliptic, slightly longer, c. 6 mm long; corolla hypocrateriform, 2.5–5 cm long, scarlet red-pink, glabrous, with a cylindrical tube, slightly and gradually narrowed towards the base, corolla lobes spreading, broadly triangular, acute and mucronate. Stamens exerted; filaments of equal length, filiform, 19–23 mm, widened and pubescent at the base, inserted 4–5 mm above the base of the tube; anther 1–2 mm long, sagittate at the base. Ovary ovoid, c. 1.5 mm long, glabrous, 4-locular; style filiform, 19–30 mm long, glabrous,

widened and articulated at the base. Fruits ovoid to globose, *c.* 15 × *c.* 18 mm, opening by 4 valves, with persistent style; seed fusiform, blackish, sparsely pubescent.

Vernacular names: *pania oke* (Marquesas Islands); *batatilla* (Panama); *mayil manikkam* (Southern India); *ākāśamulla* (Malayalam); *tarulata*, *kamalata*, *kunjalata* (Bangladesh), *cyress vine* (English), *cheveux de Venus* (French), *regadero* (Spanish) (Prota, 2024).

Flowering & fruiting: Flowers and Fruits between February and June (Heine, 1963).

Habitat: A climbing annual, growing primarily in the seasonally dry tropical biome (POWO, 2024). They can grow up to elevations of 300 m.

Distribution: Widely distributed in the tropics and subtropics, native from Mexico to Central America. In Ghana: Greater Accra, Ashanti and Volta regions (Fig. 6). New record for Ghana.

Specimens examined: GHANA, **Greater Accra Region**, Achimota Garden, 5°37'23"N, 0°12'09"W, 02.02.1931, *Asamany* 4 (GC); Achimota near Mr. Ateku's bungalow, 5°36'27"N, 0°14'03"W, 20.06.1935, *G.K. Akpabla* 310 (GC); **Ashanti Region**, Near Wesley College Kumasi, 6°42'43" N, 1°37'21" W, 27.04.1937, *Onyeama* 38 (GC); **Volta region**, Peki, 29.03.1955, *E.D. Offori* 34 (GC).

Conservation status: Not evaluated.

Uses: The leaves are used for general healing, treatment for haemorrhoids and for food, stems and roots for treatment of physical weakness, abnormal behaviour, sinking of voice, bleeding from cuts and wounds, piles, snakebites and constipation (Burkill, 1985).

24. *Ipomoea rubens* Choisy, Mém. Soc. Phys. Genève 6: 463 (1833). *Lectotype* (designated by Wood *et al.*, 2015: 20): INDIA, Silhet, *Wallich 1421* (G [G00227258!]; isolecto K [K000097038], G [G00134909!, G00134950!, G00134959!, G00134972!]).

Perennial herbs. Stems rather woody, finely

striate when dry, terete, 1–3 mm in diameter, up to 4 m long, densely short-pilose with soft greyish hairs. Leaves entire or shallowly 3-lobed, broadly ovate to circular, 5–15 × 4–12 cm, cordate with rounded auricles at the base, apex acuminate and mucronate, upper surface pubescent to densely villose, lower surface less densely pubescent to glabrous, with greyish hairs; 7–9 pairs of secondary veins; petiole slender 3–7 cm long, pilose like the stems. Inflorescences compact, sub-umbelliform, peduncle 2–15 cm long, cylindrical, pilose as the stems; bracteoles triangular, 3–7 mm long, pubescent, caducous. Flower: pedicel pilose, 5–17 mm long. Sepals subequal, ovate, apex obtuse or minutely mucronate, 6–8(–11) × 3–6(–10) mm, pilose at the apex but not ciliate, persistent in fruit; outer sepals ovate-deltoid, accrescent, to 16 mm in fruit, apex acute; inner sepals apex obtuse, margin distinctly hyaline. Corolla funnel-shaped, 4–5 cm long, purple or mauve with dark purple centre; limb 4–5 cm in diameter, sparsely pilose; midpetaline bands with silky long trichomes. Stamens included; filaments unequal, the longer ones 8–9 mm long, shorter ones *c.* 3 mm long, widened and pubescent at the base; anthers oblong, *c.* 2 mm long, base sagittate. Ovary glabrous, 2-locular, 4-ovuled; style filiform, 15–17 mm long; stigmas 2-globose. Fruits globose, 12–13 mm in diam., opening by 4 valves, glabrous; seeds ovoid, 6–9 mm, densely pilose, with white or yellowish hairs *c.* 2.5 mm long.

Vernacular names: *Otjherero*, *otjinatjoruhona* (Namibia) (Gonçalves, 1987).

Flowering & fruiting: Flowering and fruiting throughout the year.

Habitat: *Ipomoea rubens* occurs in humid, subhumid, and dry freshwater wetlands (Demissew, 2006). They can grow up to elevations of 300 m.

Distribution: Native to tropical and subtropical regions of Africa and Asia. In Ghana: Brong Ahafo, Greater Accra, Northern, Volta and Central regions (Fig. 8).

Specimens examined: GHANA, **Northern Region**, White Volta at Daboya Tamale, 16.01.1996, A.A. Ente & C.W. Agyakwa VBS 419 (GC); **Greater Accra region**, Accra plains, little lake Volta, 6°09'48"N, 0°03'54"E, alt. 50 m, 12.11.1994, C.C.H. Jongkind, D. Abbiw & C.M. Markwei 1855 (GC); **Brong Ahafo region**, Yeji, 11.04.1964, J.B. Hall 1299 (GC); *Ibid.*, 13.08.1963, B.K. Adom Boafo & M. Ansa-Emmim VBS 191 (GC); *Ibid.*, 19.05.1965, A.A. Ente & C.W. Agyakwa VBS 2115 (GC).

Conservation status: IUCN has formally assessed this species as Least Concern (Ghogue, 2020).

Uses: The leaves, shoots, and leafy stems are eaten by primates such as chimpanzees (Calabuig, 2014).

25. *Ipomoea stenobasis* Brenan, Kew Bull. 5(2): 228. 1950. *Type:* UGANDA, **Buganda Province**, Mengo District, Entebbe, November 1922, *Maitland 577* (holo K [K000097088!]).

Perennial herbs, with a tap root. Stems prostrate, angular when young, becoming cylindrical, striate, fistulose, reddish, glabrous for the most part, puberulent at the insertion of the petiole. Leaves simple, 5–7.5 (–12) × 4.5–7.5 (–11) cm, base cordate, apex acuminate and apiculate, margin entire, texture glabrous, covered with blackish dots on the lower surface, sparsely pubescent, especially along the veins, on both faces, petiole 2.5–3.6 cm long, glabrous. Inflorescences: peduncle 2–5 cm long; bracteoles deciduous, narrowly ovate-elliptic, 3–10 mm long, glabrous, with hyaline margin. Flower: pedicel 2–5 cm long, glabrous for the most part, base pubescent. Sepals elliptic, imbricate, unequal, apex obtuse; outer ones shorter, 8–12 mm, with hyaline margin; inner ones longer, 12–15 mm. Corolla magenta-pink, narrowly funnel-shaped, 3.5–6 cm, entirely glabrous, base of the tube very narrow, with 2–2.5 mm of diam. Stamens included; filaments unequal, 11–16 mm, widened and pubescent at the base; anther ovoid, c. 3 mm long, sagittate at the base, obtuse at the apex. Ovary 2 or 4-locular, glabrous; style 3 cm long, glabrous. Fruits 2.4–2.5 × 1.1–1.6

cm, surface striate, enclosed by the accrescent sepals, up to 22 mm long; seeds ovoid, 3.7–9 mm long, puberulent, especially around the hilum.

Flowering & fruiting: Flowers and Fruits between November and February (Heine, 1963).

Habitat: Granite rocks in woodland and edges of swamps. They can grow up to 200 m above sea-level.

Distribution: West Tropical Africa, and Uganda (POWO, 2024). In Ghana: Brong Ahafo region (Fig. 4).

Specimens examined: GHANA, **Brong Ahafo region**, Nsemre F.R., between Borku and Anka, 20.12.1954, C.D. Adams 2843 (GC).

Conservation status: Not evaluated.

Notes: *Ipomoea stenobasis* Brenan was described from a plant cultivated at the Royal Botanic Gardens, Kew, grown from seeds presumably collected in Ondo Province, Nigeria (R.W.J. Keay 22674; K000097034). In the protologue, Brenan (1950) also included Ugandan specimens as conspecific with the Nigerian material, despite the geographic disjunction, noting the possibility of discovering intermediate populations. A Ugandan specimen (*Maitland 577*) was selected as the type, a designation later supported by Verdcourt (1963). The fruit and seed descriptions in the protologue were based on Ugandan material (*Chandler 983, Maitland 206*). However, Brenan's annotation on the Nigerian specimen (*Keay 22674*) suggests its seeds differed from Ugandan ones, potentially warranting varietal recognition. This intricate nomenclature and taxonomic circumscription of the species *I. stenobasis* suggests that it may need a revision at broad geographic scale, to clarify the morphological and geographic circumscription of the species and whether only one – or more – species are involved.

26. *Ipomoea triloba* L., Sp. Pl. 1: 161. 1753. *Lectotype* (designated by Austin, 1978: 127): *Convolvulus pentaphyllos minor*, flore purpureo

Icon in Sloane, *Voy. Jamaica* 1: t. 97, f. 1. 1707.

Annual herbs. Stem prostrate, glabrous or puberulous, especially on the nodes. Leaves simple, broadly ovate to circular in outline, 2.4–7.5 × 3–6.4 cm, apex attenuate, base cordate, margin coarsely dentate to deeply 3-lobed, glabrous or sparsely pubescent; petiole angular, 2.5–6 cm long, glabrous, sometimes tuberculate. Inflorescences umbelliform, peduncle (1–) 2.5–5.5 cm long, angular, verruculose at the apex, glabrous; bracteoles lanceolate to oblong-ovate, 1–2 mm long, glabrous. Flower: pedicel 5–8 mm long, sometimes angular, verruculose, pubescent at the base. Sepals subequal, 5–8 mm; outer sepals oblong, slightly shorter; inner sepals elliptic-oblong, all glabrous or sparsely pilose outside, margins fimbriate, apex obtuse or acute, mucronulate. Corolla funnel-shaped, 1.5–2 cm, pink or mauve, with dark purple center, glabrous; limb obtusely 5-pointed. Stamens included. Ovary pubescent. Fruits spherical to ovoid, globose, 3–10 mm long, 5–9 mm wide; opening by 4-valves; seeds spherical, rounded, 2–3.5 mm long, dark brown, glabrous.

Flowering & fruiting: Flowers and Fruits from December to May (Heine, 1963).

Habitat: The species is found in grasslands, upland cultivated fields, roadsides, waste lands and disturbed sites; it is a climbing annual or perennial and grows primarily in the seasonally dry tropical biome (CABI, 2021). This species can be found growing up to 160 m above sea-level.

Distribution: Native from Mexico to Brazil, and Caribbean (Alencar *et al.*, 2021; POWO, 2024). In Ghana: Greater Accra and Eastern regions (Fig. 7). New record for Ghana.

Specimens examined: GHANA, **Eastern region**, Kade Agricultural Research Station, 6°8'28" N, 00°53'56" W, alt. 200 m, 22.12.1996, H.H. Schimdt, M. Merello, J. Amponsah & M. Chintoh 2271 (MO, GC); **Greater Accra**, Maamobi, 04.05.1976, J.B. Hall 43692 (GC).

Conservation status: Least Concern (Contreras & Wood, 2019).

Uses: The whole plant is used as painkillers (Burkill, 1985).

27. *Ipomoea verbascoidea* Choisy, *Mém. Soc. Phys. Genève* 8(1): 56. 1838. *Type:* ANGOLA, *s.d.*, J.J. da Silva *s.n.* (holo P [P00150787!]; iso P [P00150788!]).

Shrubs, or stout lianas, with an enlarged storage root. Stems suberect to climbing, subcylindrical, longitudinally striate, white or yellow tomentose in young state, becoming sparsely pubescent to glabrous with age. Leaves ovate to suborbicular, 4–15 × 3–17 cm, apex rounded to retuse and shortly apiculate, base cordate to truncate, margin entire to slightly sinuate, adaxial face finely pubescent, abaxial face densely floccose tomentose, white to greyish; petiole 2–10 cm, pubescent, carrying 2 glands at the insertion of the leaf lamina. Inflorescences: peduncle 1–3 cm, tomentose as the stem; bracteoles slightly unequal, linear-oblong, up to 2 cm long, tomentose, carinate. Flower: pedicel c. 1 cm long, pubescent. Sepals subequal, broadly elliptic, coriaceous, pubescent; outer ones 11–16 × 6–8 mm; inner ones 13–17 × (5–) 7 mm. Corolla broadly tubular, 6–12 cm long, pink, mauve or white, with darker purple center, glabrous. Stamens of equal length, up to 6 cm long, widened and pubescent at the base; anther narrowly obloid, 6–12 mm long, sagittate at the base. Ovary ovoid, 2.5–3 mm long, 2-locular, 4-celled, glabrous; style filiform, 4.6–8 (–8.5) cm long; stigmas 2, globose. Fruits oblong ovoid, opening by 4-valves, glabrous, completely enclosed by the persisting coriaceous sepals; seeds ovoid, 6–8 mm, brown, densely pubescent, covered in long cottony white hairs.

Vernacular names: *damara creeper* (English); *damarawinde* (German). In Namibia, known by several names: *hoan* (Ju), *n!huru* (Kung bushmen); *engamukuiju* (Kwanyama); *engamukuiyu* (Oshikwanyama); *engamukuiyu* (Oshiwambo); *otjindwapa* (Otjiherero) (Verdcourt, 1963; Prota, 2024).

Flowering & fruiting: Reported to flower at different times of the year in different countries; in Southern Africa, reported to flower from November to March; in Namibia, it flowers in midsummer (Prota, 2024).

Habitat: Often found growing in woodlands, open grassland, at elevations from 490–1,525 m; some populations can be found in forests, also in subhumid, dry, subarid environments.

Distribution: Native to and occurs in Angola, Botswana, Cameroon, Caprivi Strip, Congo, Ghana, Guinea, Ivory Coast, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Sudan, Tanzania, Togo, Uganda, Zambia, Zaïre, Zimbabwe. In Ghana: Ashanti region and Brong Ahafo region (Fig. 1).

Specimens examined: GHANA, **Northern region**, Konkori, Mole National Park, 28.07.1976, Hall & Lack 46265 (GC).

Conservation status: Not evaluated.

Uses: The root can be used to obtain refreshing or lifesaving water (to quench thirst): the root is grated, the shavings put in one hand, squeezed and the liquid let to run down along the thumb right into the mouth; however, the liquid is said to negatively affect one's ability to move and as a result one is forced to wait until the side effects wear off, for which there may be a slightly narcotic or paralysing effect; the Tswana people of Southern African countries pound the root in milk to make a potion for anorexia and poor weight gain. It is also used as food for bucks, especially antelope species (Prota, 2024).

28. *Ipomoea violacea* L., Sp. Pl. 1: 161. 1753.
Lectotype (designated by Manitz, 1977: 269): Icon in Plumier, Codex Boerhaavianus, t. sub n. 851. 1733.

Perennial, glabrous, herbs. Stems woody at the base, twining or prostrate, often longitudinally wrinkled, but otherwise smooth. Leaves simple, cordate, circular or ovate, 5–16 × 5–14 cm, apex

acuminate, mucronate, rounded or rarely angular, base cordate, glabrous; petiole glabrous, 3.2–11 cm. Inflorescences: peduncle 2.5–4.5 (–7) cm. Sepals subcircular, equal or outer two shorter, 1.5–2.5 cm, margins hyaline, coriaceous, apex obtuse or emarginate, mucronulate. Flower opens in night: pedicel 1.5–5 cm, thickened in fruit. Corolla salver-shaped or very narrowly funnel-shaped, white or pale greenish yellow, with green midpetaline bands, 9–12 cm long, glabrous. Staminal filaments inserted near the base of the corolla tube. Ovary glabrous; stigma 2-globose. Fruits ovoid to globose, opening by 4-valves, glabrous, pale brown, 2–2.5 cm; seeds sub-trigonal, 1–1.2 cm long, black, densely short tomentose, edges with c. 3 mm long sericeous hairs.

Vernacular names: beach moonflower, sea moonflower (English) (Michaels, 2022).

Flowering & fruiting: Flowers and Fruits from March to May (Heine, 1963).

Habitat: Coastal bushland; beaches, seaside thickets, edges of brackish rivers and lagoons; near sea-level to 100 m (Heine, 1963).

Distribution: Native to tropical and subtropical coasts. In Ghana: Western region (Fig. 7).

Specimens examined: GHANA, **Western region**, Axim, strand vegetation near beach, 01.03.1934, F.R. Irvine 2565 (GC); *Ibid.*, 01.04.1965, J.K. Morton A2092 (GC); *Ibid.*, 19.05.1956, J.K. Morton 2092 (GC); Shama, 15.05.1965, D. Hall 2982 (GC).

Conservation status: Not evaluated.

Uses: The seed contains small quantities of the hallucinogen LSD, this has been used medicinally in the treatment of various mental disorders; the leaves and the tuber serve as food (Alencer *et al.*, 2021; Michaels, 2022).

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