

Nine Revived Records to the Flora of Egypt

Adel El-Gazzar^{1*} and Ali A. Hammouda²

1. Department of Biological and Geological Sciences, Faculty of Education at El-Arish, Suez Canal University, El-Arish, N. Sinai, Egypt. E-mail: elgazzar22@yahoo.com
2. Flora and Phytotaxonomy Research, Horticultural Research Institute, Agricultural Research Centre, P.O. Box Ministry of Agriculture, Dokki, Cairo, Egypt

ABSTRACT

Specimens of *Asclepias flavida* N.E.Br. (Asclepiadaceae), *Boscia salicifolia* Oliv. (Capparaceae), *Cicer arietinum* L. (Leguminosae-Papilionoideae), *Euphorbia nutans* Lag. (Euphorbiaceae), *Lepidium virginicum* L. (Cruciferae), *Oldenlandia fastigiata* Bremek. var. *fastigiata*, *Oldenlandia hedyotoides* (Fish. & Mey.) Boiss. (Rubiaceae), *Premna resinosa* Schauer (Verbenaceae) and *Vernonia cinerascens* Schultz Bip. (Compositae), collected from Egypt, were located in the two herbaria CAI and CAIM. All nine species were mentioned in earlier floristic treatments, unpublished lists and accounts of excursions carried out in the 1930's, but were overlooked in subsequent floristic works. The present article revives the recording of the nine species.

KEYWORDS: *Asclepias flavida*, *Boscia salicifolia*, *Cicer arietinum*, Egypt, *Euphorbia nutans*, flora, *Lepidium virginicum*, *Oldenlandia fastigiata* var. *fastigiata*, *Oldenlandia hedyotoides*, *Premna resinosa*, *Vernonia cinerascens*.

INTRODUCTION

A revised 'Flora of Egypt' was recently completed by Boulos (1999-2005) with a useful prelude in the form of a comprehensive checklist (Boulos 1995). Both works incorporated numerous corrections, improvements and additions to their predecessors (Muschler 1912, Montasir & Hassib 1956, Täckholm 1956 and 1974, Täckholm & Boulos 1972, and El Hadidi & Fayed 1994/95). However, there are several instances of discrepancies between these floras. Thus, it is not uncommon to find that some species are mentioned in one of the earlier floras and omitted for no obvious reason in subsequent works. These omissions prompted us to survey some of the holdings of the two major herbaria in Egypt at Cairo University (CAI) and the Agricultural Museum, Cairo (CAIM); CAI and CAIM are their listed acronyms in the Index Herbariorum (Holmgren *et al.* 1990). The search yielded specimens of species recorded only by Muschler (1912) and/or Montasir & Hassib (1956) but were later overlooked. Furthermore, numerous specimens were located in both herbaria representing species reported by Fahmy (1936) in his account of an excursion to Gebel [mountain] Elba (GE) or mentioned in the unpublished list prepared by Abdallah (1983) for the vegetation of the same region but not included in any floristic study. In 1978, Boulos added *Oldenlandia fastigiata* Bremek. var. *fastigiata* to the flora of Egypt on the basis of two specimens collected at Aswan by Muschler and Hadidy and kept at Kew (K) and CAI, respectively. A single specimen (collected by Boulos at Aswan in August 1979) and kept in CAI confirmed the previous record. Based on specimens kept in CAIM, Abdallah & Sa'ad (1975) added *Boscia salicifolia* Oliv., *Euphorbia nutans* Lag., *Lepidium virginicum* L. and *Vernonia cinerascens* Schultz Bip. to the flora of Egypt, with detailed descriptions and photographs of specimens, but none of these species was later incorporated in subsequent floristic accounts. The present article aims to revive the nine forgotten floristic records.

MATERIALS AND METHODS

Records of the nine species mentioned in this article are based on specimens kept in the two herbaria CAI and CAIM. These specimens were thoroughly examined and their identity was verified using the floras of adjacent Sudan (Andrews 1950-1956), tropical Africa (Oliver 1871-1900, Hutchinson & Dalziel 1963) and tropical Arabia (Schweinfurth 1894-1899, Blatter 1919-1936, Schwartz 1939), as well as by matching with other specimens kept in the same herbaria but collected from various regions in Africa and Arabia.

RESULTS AND DISCUSSION

1. *Asclepias flavida* N.E.Br., in Kew Bull. 11: 255 (1895)..... (Fig.1)

Asclepiadaceae. Perennial shrub 1-1.5 m high, leaves alternate, narrowly linear, 4-8(-10) cm long, 0.8-1.2 cm broad with entire revolute margin and tapering at apex and base. Flowers yellow with a purple centre, in 4-6 flowered pedunculated axillary umbels, peduncles and pedicels white-tomentose. *Pollinia pendulous*, club-shaped, 1232 x 368 μm with terminal attachment to caudicles, corpuscle 304 x 160 μm (El-Gazzar & Hamza, 1973). Follicle erect, ovate, long-beaked and with numerous appendages .

Specimen examined: M. Drar (s.n.), 10.3.1938, Erkwit, Gebel Elba (CAI).

Previous record(s): Mentioned only by Fahmy (1936).

Status: a revived generic record to the flora of Egypt.

2. *Boscia salicifolia* Oliv., Fl. Trop. Afr. i: 93 (1868).

Syn. *Boscia pubens* Rich., in Oliv. l.c.: 94.

Capparaceae. Tree up to 10 m high. Leaves simple, alternate, lanceolate to narrowly linear, with entire margin, acute apex and prominent midrib beneath. Inflorescence usually leaves, in dense shortly tomentose racemes. Flowers tetramerous, shortly pedicelled; gynophore as long as or shorter than ovary. Fruit smooth and glossy .

With the addition of *Boscia salicifolia*, the genus would be represented in Egypt by three species which are easily distinguishable as follows:

A. Leaves 2.5-6 cm long *Boscia angustifolia* A. Rich .

A. Leaves up to 12 cm longB

B. Leaves elliptic to ovate, 2-4 cm broad, apex rounded, gynophore

longer than ovary, fruit pitted and wrinkled *Boscia senegalensis* Poir.

B. Leaves narrowly linear, 1.2 cm broad, apex acute, gynophore

equal to or shorter than ovary, fruit smooth and glossy *Boscia salicifolia* L.

Specimen examined: JR Shabetai (z 2371), 29.1.1933, Wady [valley] Darawin, Gebel Elba (CAIM).

Previous record(s): only by Abdallah and Sa'ad (1975).

3. *Cicer arietinum* L., Sp. Pl., ed. 1, ii: 738 (1753).(Fig. 2)

Syn. *Cicer cuneatum* Hochst., in Schimper Herb. Abyss. no. 810 (1854).

Leguminosae-Papilionoideae. Annual herb, 30-50 cm high, pubescent. Leaves pinnate, leaflets 12-16, with serrate margin, terminal leaflets modified into tendrils; stipules flabellate to the base. Flowers solitary, axillary; calyx persistent, deeply incised with linear teeth; corolla purplish. Pod oblong, 2-2.25 x 1.12 cm, with silky indumentum. $2n = 14, 16, 24, 32$ (Fedorov, 1974).

Specimens examined: JR Shabetai (z 2610), 26.1.1933, Gebel Ekwil, Gebel Elba (CAIM); J.R. Shabetai (z 2620), 29.1.1933, Wadi Darawein, Gebel Elba, (CAIM); M. Drar (s.n.),

20.1.1933, Wadi Akâw, Gebel Elba (CAIM); M. Drar (s.n.), 28.1.1933, Wadi Akâw, Gebel Elba, S.E. Desert (CAIM).

Previous record(s): mentioned by Muschler (1912), Fahmy (1936), and Montasir and Hassib (1956) but not in any subsequent flora.

Status: the species is widely cultivated in Egypt and elsewhere, but the spontaneous specimens collected from GE represent a revived generic record to the flora of Egypt.

ξ. *Euphorbia nutans* Lag., Gen. et Sp. Nov.: 17 (1816).

Syn. *Euphorbia hypericifolia* sensu Engelm., in Chapm. Fl. S.U.S.: 403 (1860), non L., Sp. Pl., ed. 1, i: 454 (1753).

Euphorbiaceae. Annual, sparingly hirsute, 15-30 cm high. Stem erect, slender, repeatedly forked above. Leaves opposite, subsessile, oblique at base, apex obtuse, margin dentate-serrate; stipules triangular, reddish, fringed. Cyathia solitary or in monochasial cymes; involucre campanulate, outer surface glabrous, inner hairy; glands white with entire or slightly sinuate appendage. Capsule 2 mm across or smaller, globular; carpels slightly keeled, glabrous. Seeds 1-1.2 mm, tetragonous-ovoid, black, transversely wrinkled. $2n = 12, 14$ (Fedorov, 1974).

Specimens examined: M Mokhtar and A Hosein (1), Ousim, 12.8.1974, N.W. Giza; H Helmy and R Hegazy (F15), 21.8.1974, Bashtil, Giza; H Helmy and M Sama'an (4), 12.8.1975, El-Mansouria, W. Giza (CAIM).

Previous record(s): In addition to the specimens collected from different localities in Giza and the records mentioned by Abdallah and Sa'ad (1975), the species is reported by Zohary *et al.* (1983) to occur in northern and southern Sinai.

•. *Lepidium virginicum* L., Sp. Pl., ed. 1, ii: 645 (1753).

Cruciferae. Annual, 40-60 cm high, sparsely pubescent. Stem slender, richly branched above. Leaves simple, alternate, oblanceolate, margin coarsely serrate, apex acute. Flowers in open terminal racemes, white. Silicule obovate to orbicular, 3 mm long; pedicel 1.5-2 times as long as silicule; locule 1-seeded. The species is easily distinguishable from its closest relative *Lepidium sativum* L. which has bipinnatisect basal and pinnatisect cauline leaves. $2n = 32$ (Fedorov, 1974).

Specimen examined: JR Shabetai (z 4782), 22.6.1936, Ismailia (CAIM).

Previous record(s): only by Abdallah and Sa'ad (1975).

¶. *Premna resinosa* (Hochst.) Schauer, in DC. Prod. xi: 637 (1847)..... (Fig. 3)

Syn. *Holochiloma resinolum* Hochst. in Flora 21: 371 (1841).

Verbenaceae. Erect shrub, up to 1.5 m high, stems whitish. Leaves coreaceous, strongly aromatic when crushed, exstipulate, ovate-oblong, 1.5-2.5x 0.7-1.2 cm, glabrous or sparsely hairy beneath, apex obtuse, margin entire of obscurely dentate. Flowers small, white, in terminal paniced dichasial cymes. Mature drupes black.

Specimens examined: M. Drar (s.n.), 1.2.1933, Wadi Idaib, Gebel Elba, S.E. Desert (CAI, CAIM); M. Drar (s.n.), 15.9.1936, Wadi Aidaib, Gebel Elba (CAI, CAIM).

Previous record(s): Mentioned only by Fahmy (1936) and Abdallah (1983).

Status: a revived generic record to the flora of Egypt.

∇. *Oldenlandia fastigiata* Bremek., in Verh. K. Nederl. Akad. Wetensch., *Afd. Natuurk.*, sec. 2: 48: 174 (1952) var. *fastigiata*.(Fig. 4)

Syn. *Oldenlandia corymbosa* Auct., non L. in Sp. Plant., i: 119 (1753).

Rubiaceae. Slender erect annual herb, 15-20 cm high, stem branching at base. Leaves simple, opposite-ternate, narrowly linear, 2-3 cm long, 0.2-0.3 cm broad, glabrous, stipulate. Flowers

tetramerous, in axillary 3-4 flowered cymes, calyx persistent, petals white-pale yellow. $2n = 18, 36, 54$ (Fedorov, 1974).

Specimen examined: L Boulos (s.n.), Aug. 1979, Aswan (CAI).

Previous record(s): recorded only by Boulos (1978) who cited two additional specimens collected at Aswan by Muschler and Hadidi and kept at K and CAI, respectively.

Status: a revived record of the species and variety.

8. *Oldenlandia hedyotoides* (Fish. et Mey) Boiss., Fl. Orient. iii: 11 (1875).....(Fig. 5)

Syns. *Karamyschewia hedyotoides* Fish. et Mey., in Bull. Soc. Mosc.: 267 (1838).

Oldenlandia ramosissima Hohen., in Hb. Lenkoran. Unio Itin. (1838).

Theyodis octodon A Rich, Fl Abyss, i: 364 (1847).

Rubiaceae. Profusely branched slender annual herb forming flattened mats. Stem angular, glabrous. Leaves simple, opposite narrowly ovate-elliptical, 1.2-1.8 cm long, 0.15-0.2 cm broad, stipulate; stipules slightly sheathing. Flowers minute, tetramerous, in 2-4 axillary verticillasters. Calyx with 4 equal teeth and as many smaller intervening appendages. Petals 4, as long as calyx, glabrous, white. Stamens and style shorter than petals .

Specimens examined: G. Schweinfurth (s.n.), 15.1.1909, Jable ile Hakareb [scorpions' mountain], Assuan [Aswan], (CAI); Gunnar Täckholm (s.n.), 17.1.1927, Siheil Island, Assuan [Aswan] (CAI).

Previous record(s): Recorded by Muschler (1912) from a locality near Cairo and on the islands of the River Nile near Aswan, and by Montasir and Hassib (1956).

Status: a revived record of the species.

9. *Vernonia cinerascens* Schultz Bip., in Schweinf. Fl. Aethiop.: 162 (1867)..... (Fig. 6)

Syn. *Vernonia spathulata* Hochst. in Schimper Herb. Abyss. (1854.)

Compositae-Vernonieae. Small shrub 0.4-1.0 m high, covered with soft appressed white pubescence, hairs medi-fixed and mixed with minute sessile glands. Leaves simple, alternate, sessile, obovate-spathulate with obtuse apex and entire-obscurely dentate margin. Capitula on long pedicels, in axillary and terminal dichotomous cymes, 8-10-flowered; flowers purple. *Phyllaries lanceolate-oblong*, pubescent. Achene with 8-10 obscure ridges provided with ascending setae; pappus present. $2n = 20, 40$ (Fedorov, 1974).

Vernonia cinerascens is distinguished from the only other representative of tribe Vernonieae in the flora of Egypt (*Ethulia conyzoides* L.f. subsp. *conyzoides*) by the absence of pappus in *E. conyzoides* .

Specimen examined: JR Shabetai (z 2439), 4.2.1933, Wady Dagaleib, Gebel Elba (CAIM).

Previous record(s): only by Abdallah and Sa'ad (1975).

The revived records made in the present article might be regarded as supplementary to Boulos' Flora of Egypt (1999-2005). In addition to these records, numerous specimens of *Oldenlandia senegalensis* (Cham. et Schlecht.) Hiern were collected and identified by M Hassib in 1930 and by IR Fahmy and M Hassib in 1933 from various localities in the Egyptian sector of GE and deposited in CAI and CAIM. Based on these specimens, the species was recorded only by Montasir & Hassib (1956). However, in checking the identification of these specimens with the aid of floras of neighbouring countries as well as by matching them with well-authenticated material collected from tropical Africa and Arabia, it became evident that they represent *Kohautia caespitosa* Schnizl (syn. *Oldenlandia caespitosa* Hiern), which was consistently recorded in all subsequent floras. The addition of *O. senegalensis* to the flora of Egypt was clearly based on a misidentification .

The present preliminary survey of a few herbarium cabinets in CAI and CAIM yielded the revival of nine generic and specific records to be incorporated in the flora of Egypt. This

outcome seems to indicate that taxonomists might be well advised to start searching deeper and with much greater care into the contents of these and other local and foreign herbaria for similar results. Discrepancies in the species content of different treatments of the same flora should no longer remain unaddressed.

Acknowledgements: Grateful thanks are due to Prof. H A Hosny (The Herbarium, Cairo University) for loan of specimens, and to Prof. L Boulos (Botany Department, Alexandria University) for critically reading the manuscript.

REFERENCES

- Abdallah M (1983) The vegetation of Gebel Elba. Unpublished report submitted to The Academy of Scientific Research and Technology, Cairo.
- Abdallah M & Sa'ad FM (1975) Taxonomical studies in the flora of Egypt. V. New additions to the flora of Egypt. *Notes from the Agricultural Research Centre Herbarium, Egypt* 2: 1-9.
- Andrews FW (1950-1956) The Flowering Plants of the Anglo-Egyptian Sudan. Vols. 1-3. T Buncle & Co Ltd., Arbroath, Scotland. pp. 1-237, 1-485, 1-579 .
- Blatter E (1919-1936) Flora Arabica. Records of the Botanical Survey of India 8(1-6): 1-519.
- Boulos L (1978) Notes on the flora of Egypt. I. Six species new to the flora of Egypt. *Egypt. J. Bot.* 21(3): 223-226.
- Boulos L (1995) Flora of Egypt Checklist. Al Hadara Publishing, Cairo, Egypt. pp. 287.
- Boulos L (1999-2005) Flora of Egypt. Vols. 1-4. Al Hadara Publishing, Cairo, Egypt. pp. 419, pp. 352, pp. 373, pp. 617.
- El-Gazzar A & Hamza MK (1973) Morphology of the twin pollinia of Asclepiadaceae. *Pollen et Spores* 25: 459-470.
- El Hadidi MN & Fayed AA (1994/95) Materials for Excursion Flora of Egypt (EFE). *Taeckholmia* 15: 1-233.
- Fahmy IR (1936) Report on Gabel Elba. *The Egyptian University Publ.* 7: 1-57.
- Fedorov AA (1974) Chromosome numbers of Flowering Plants. Reprint by Otto Koeltz Science Publishers, Koenigstein, Germany. pp. 926 .
- Holmgren PK, Holmgren NH & Barnett LC (1990) Index Herbariorum. Part 1. The Herbaria of the World. *Regnum Vegetabile* vol. 120. pp. 693.
- Hutchinson J & Dalziel JM (1963) Flora of West Tropical Africa. 2 vols. Crown Agents for Oversea Governments and Administrations. Millbank, London .
- Montasir AH & Hassib M (1956) Illustrated Manual Flora of Egypt. Part 1. Dicotyledons. Imprimeri Misr, S.A.E., Cairo. pp. 615.
- Muschler R (1912) A Manual Flora of Egypt. 2 vols. R Friedlaender & Sohn Berlin. pp. 1312.
- Oliver D (1871-1900) Flora of Tropical Africa. Vols. 2, 3 and 5. L Reeve & Co Ltd. Ashford, Kent.
- Schwartz O (1939) Flora des tropischen Arabien. Institute für allgemeine Botanik, Hamburg. pp. 393.
- Schweinfurth G (1894-1899) Sammlung arabisch-aethiopischer Pflanzen. Ergebnisse von Reisen in den Jahren 1881, 88, 89, 91, 92 und 94. *Bull. Herb. Boiss.* 2: 1-113; 4: 115-266; 7: 267-340.
- Täckholm V (1956) Students' Flora of Egypt. Anglo-Egyptian Bookshop, Cairo. pp. 649.
- Täckholm V (1974) Students' Flora of Egypt. 2nd ed. Cairo University, Cairo. pp. 888.
- Täckholm V & Boulos L (1972) Supplementary notes to Students' Flora of Egypt. *Publ. Cairo Univ. Herb.* 5: 3-135.
- Zohary M, Heyn CC & Heller D (1983) Conspectus Florae Orientalis. *An annotated catalogue of the flora of the Middle East. Fascicle* 2: 27.

الملخص العربي

إعادة تسجيل تسعة أنواع في الفلوره المصرية

عادل إبراهيم الجزار¹ و علي عبد العاطي حمودة²

١. قسم العلوم البيولوجية والجيولوجية - كلية التربية بالعريش - جامعة قناة السويس - شمال سيناء

٢. سم بحوث الفلوره وتصنيف النباتات - معهد بحوث البساتين - مركز البحوث الزراعية - وزارة الزراعة - ١٢٦١٨ الدقي - الجيزة

تم العثور على عدد من العينات التي تمثل تسعة أنواع نباتية جُمعت من مصر وحُفظت في معشبة كلية العلوم بجامعة القاهرة (ورمزها CAI) ومعشبة قسم بحوث الفلوره وتصنيف النباتات بوزارة الزراعة (ورمزها CAIM)، وكان قد سبق ذكر هذه الأنواع في بعض الدراسات والتقارير المنشورة وغير المنشورة عن بعض الرحلات العلمية التي تمت في الثلاثينيات من القرن العشرين أو ما قبلها ولكنها لم تسجّل في ما نُشر بعد ذلك من دراسات شاملة لكل نباتات الفلوره المصرية. وفي هذا البحث إعادة تسجيل لهذه الأنواع التسعة مع وصف موجز لأهم الصفات المميزة لكل منها وصورة لإحدى العينات المُمثلة لكل نوع. وهذه الأنواع هي:

Asclepias flavida N.E.Br. (Asclepiadaceae), *Boscia salicifolia* Oliv. (Capparaceae), *Cicer arietinum* L. (Leguminosae-Papilionoideae), *Euphorbia nutans* Lag. (Euphorbiaceae), *Lepidium virginicum* L. (Cruciferae), *Oldenlandia fastigiata* Bremek. var. *fastigiata*, *Oldenlandia hedyotoides* (Fish. & Mey.) Boiss. (Rubiaceae), *Premna resinosa* Schauer (Verbenaceae) and *Vernonia cinerascens* Schultz Bip. (Compositae).



Fig. 1. *Asclepias flavida* N.E.Br.

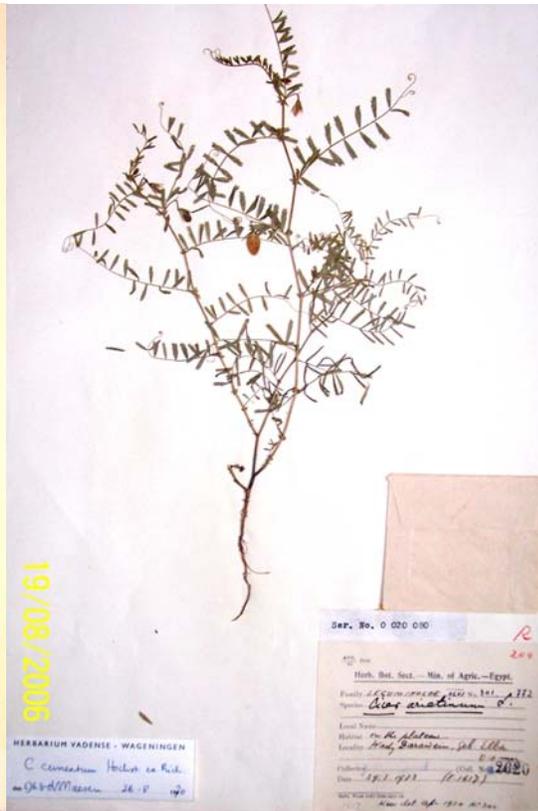


Fig. 2. *Cicer arietinum* L.

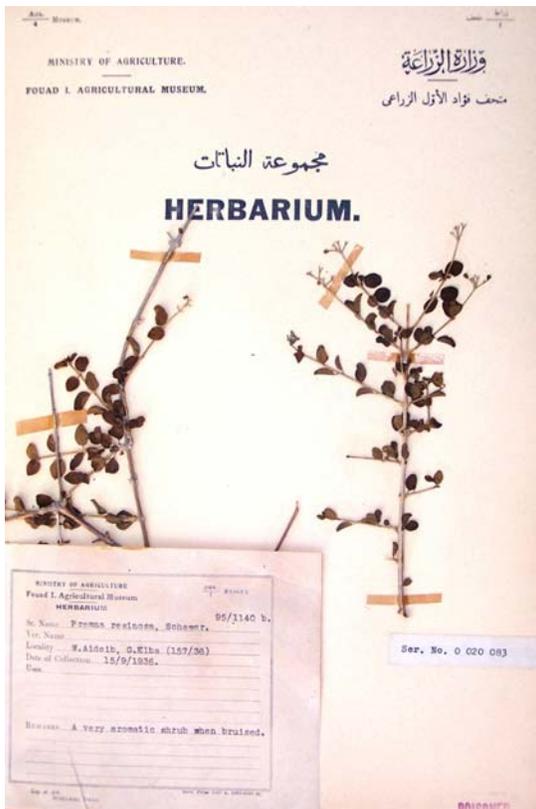


Fig. 3. *Premna resinosa* (Hochst.) Schauer



Fig. 4. *Oldenlandia fastigiata* Bremek var. *fastigiata*

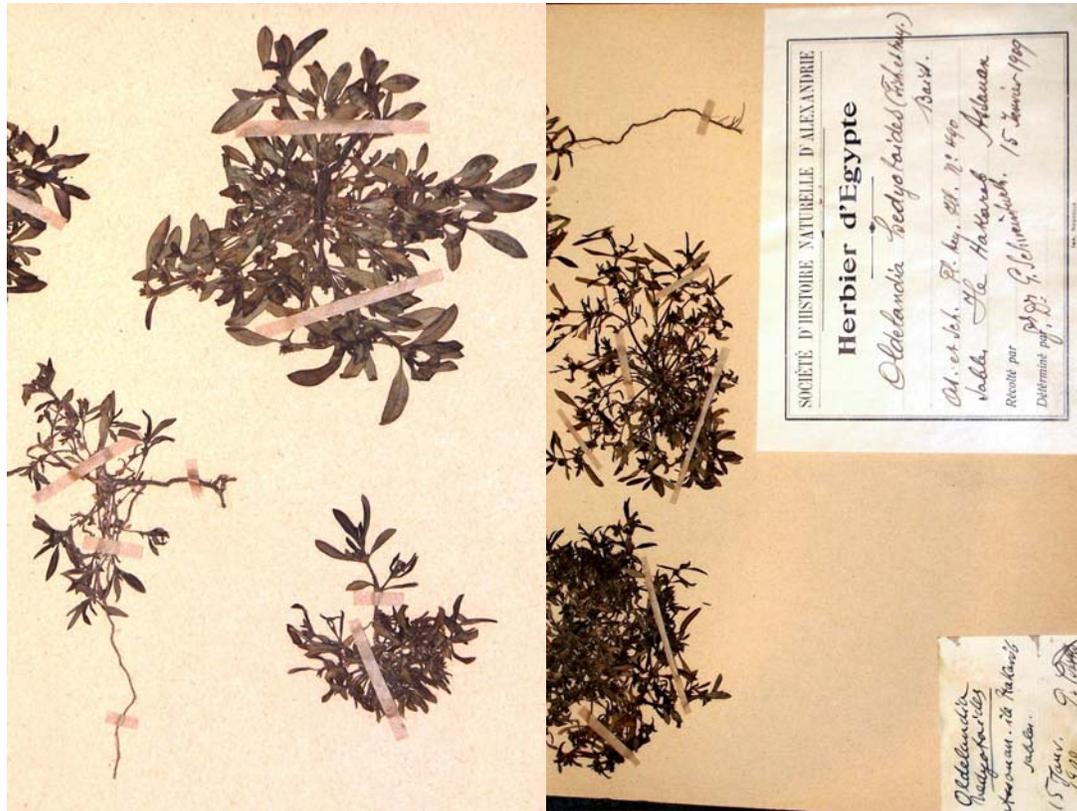


Fig. 5. *Oldenlandia hedyotoides* (Fish. et Mey.) Boiss.



Fig. 6. *Vernonia cinerascens* Schultz Bip.