J. King Saud Univ., Vol. 5, *Science* (2), pp. 119–126 (A.H. 1413/1993)

Taxonomic Studies on the Genus *Nuxia* Comm. ex Lam. in Saudi Arabia

Ahmed H. Alfarhan
Herbarium, Department of Botany & Microbiology, King Saud University, P.O. Box 2455, Riyadh 11451, Saudi Arabia

(Received 5 July 1992; Accepted for publication 28 September 1992)

Abstract. A review of the genus *Nuxia* Comm. ex Lam. belonging to the family Buddlejaceae has been carried out. Description and a key to species are provided to facilitate their identification. Distribution and a comparison with other members of the family present in Saudi Arabia are also given. Of the two species mentioned, *N. congesta* Fresen. is reported for the first time from Saudi Arabia.

Introduction

Nuxia Comm. ex Lam. comprises about 40 species [1, p. 802] distributed in Tropical Africa, Madagascar, Mascarene islands and Saudi Arabia. In Saudi Arabia the genus is distributed in the Southern Hijaz/Asir area. Though widespread, the genus is seldom abundant, usually seen singly or in small groups of minor ecological importance. The systematic position of the genus is debatable due to its relationships with other families. The genus was previously included in Loganiaceae, a mixed family containing several distant groups, which are now known not to be closely related to each other [2, p. 222-223]. Some authors have used anatomical characters as a basis to divide the family into two subfamilies viz. Buddleoideae and Loganioideae. The former differs from the letter in the absence of intraxylary phloem and the presence of glandular, stellate or scaly indumentum. The family Buddlejaceae has two main genera, viz. *Buddleja* and *Nuxia,* both reported from Saudi Arabia. The genus *Buddleja* (represented in Saudi Arabia by a single species, *B. polystachyta* Fres.) can easily be separated from *Nuxia* by its stellate indumentum, densely clustered terminal spike and the included stamens.

Materials and Methods

In Saudi Arabia, *Nuxia* is represented by two species, *N. oppositifolia* (Hochst.) Benth and *N. congesta* Fresen. The range of distribution of *N. congesta,* previously believed to be restricted to the East African countries [3, p. 381;4, p. 511-515] has now been found to extend across the Red Sea in the Asir mountains in Saudi Arabia. Apparantly, it was Blatter [5, p. 305] who reported the genus *(N. dentata* R. Br.) for the first time in Flora Arabica. Recently Migahid [6, p. 77] and Collenette [7, p. 353] collected the same species from Saudi Arabia. Migahid reported *Lachnopylis oppositifolia (= N. oppositifolia)* and Collenette reported *N. oppositifolia* from the northern and southern Hijaz areas, respectively. Commercially the genus is of no use except in certain countries like Madagascar, where the wood of a few species is used for building houses. Vernacular names in Saudi Arabia vary from region to region. Common names are 'rumma' and 'shadan'.

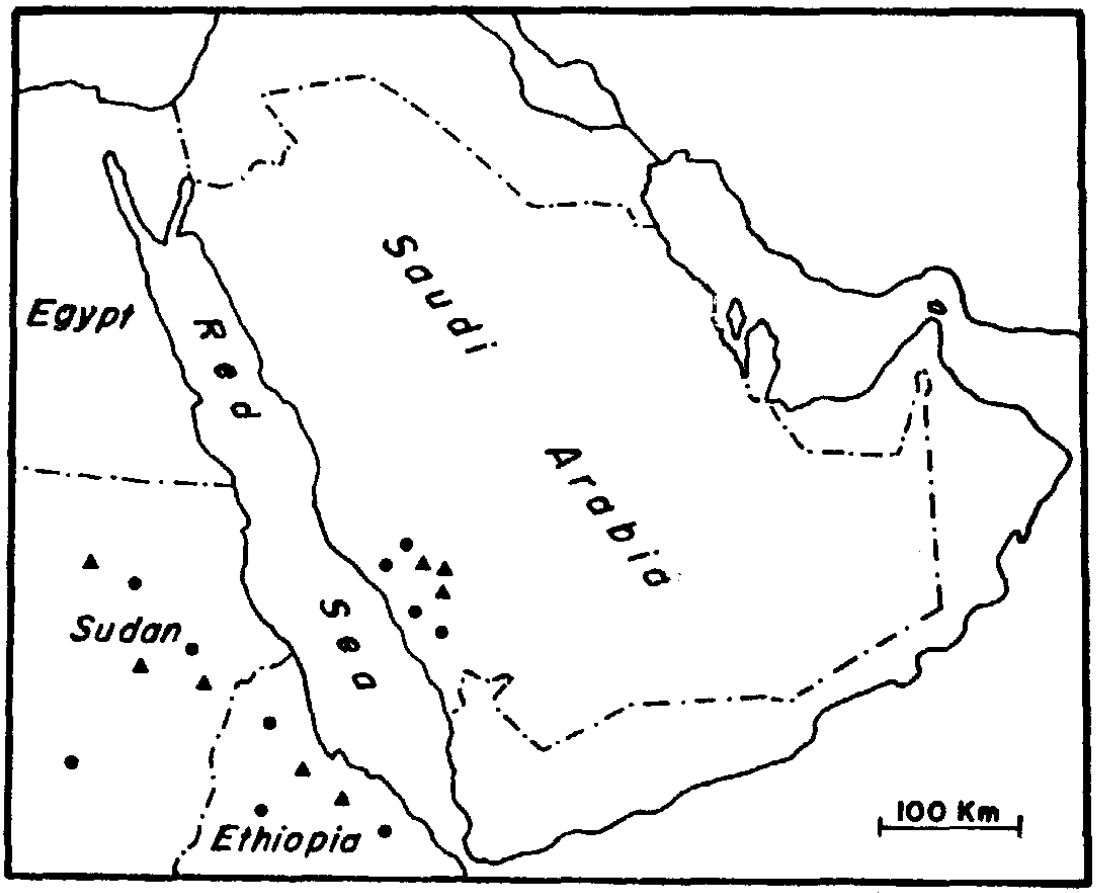
***Nuxia* Comm. ex Lam. Illust. 1; 295, t.71 (1791)**

Large shrub tree or attaining 10 m. Young branches glabrous or glaucescent or pubescent. Leaves opposite or verticillate, entire or serrate, stipules absent or reduced to a mere line. Flowers copious in cymose panicles, sessile or shortly pedicellate, densely villous inside, glabrous or shortly pubescent outside, persistent and valvate. Corolla sympetalous, funnel shaped, circumscissile at the base, hairy or glabrous outside, villous at the throat, lobes 4, sometime reflexed, deltoid or obtuse at the apex, spathulate, aestivation imbricate. Stamens 4, exerted, attached just below the throat of the corolla tube; filaments filiform, glabrous; anthers dithecous, divaricate, confluent at the apex. Ovary ovoid or sub globose, hairy above, 2 celled; ovules many on axile placentation. Capsule obovate or olong, hairy on top, 2-valved. Seeds numerous, small, oblong.

Key to the species

Leaves ternate, entire; corolla lobes acute, pubescent outside.	1. *N. congesta*
Leaves opposite, deccussate, bluntly serrate; corolla lobes obtuse, glabrous.	2. *N. oppositifolia*

The number and length of calyx lobes cannot be considered as a good character to segregate these two species. The character [8, p. 41-45], lobes cleanly dividing against the lobes failing to divide cleanly does not work in our material since this character is noticed in both species.



Map showing the distribution of *Nuxia* spp. in Saudi Arabia and neighboring countries in Africa.
● ***N. oppositifolia*** ▲ ***N. congesta.***

1. *N. congesta* R.Br. (in Salt 1814 nom. nud.) ex. Fresen in Flora 21: 606 (1838); Baker, J.G. in Thiselt.-Dyer, Fl. Trop. Afr. 4(1): 512 (1903); Bruce, E.A. & Lewis, J. Fl. Tro. E. Afr. Loga.: 44 (1957). Fig. 1.

Type: Ethiopia, unlocalized, Rueppell (Fr. holo.).

Syn.: *Lachnopylis ternifolia* Hochst. in Flora 26: 77 (1843); *L. congesta* (R. Br.) C.A. Sm., Andrews, F.W., Fl. Pl. Sudan, 2:381 (1952); *L. compacta* C.A. Sm., Andrews, F.W., Fl. Pl. Sud., 2: 381 (1952); *L. platyphylla* (Gilg) Dale, Fl. Pl. N. Afr., 2: 60 (1947); *L. odorata* (Gilg) Greenway in Burtt-Davy, Check-Lists of For. Trees & Shrubs of Brit. Emb. No. 5(1): 112 (1940); *Nuxia sambesina* Gilg, Baker, J.G. in Thiselt.-Dyer, Fl. Trop. Afr., 4(1): 514 (1903); *N. goetzeana* Gilg in Engl. Jahrb. 30: 375 (1901); Baker, J.G. in Thisel.-Dyer, Fl. Tro. Afr., 4(1): 514 (1903); *N. platyphylla* Gilg in Eng. Jahrb., 32: 141 (1902).

Tree, usually 4.5–12 m. sometimes reaching upto 21 m.; bark rugged, dark-brown to blackish in colour, brachlets 3-sided. Leavea ternate, 5-10 cm long, 1.5–2 cm wide, petiolate, base cuneate or sub-attenuate, ovate-elliptic to oblanceolate, entire or weakly serrulate or wavy, sub-acute to obtuse, often with a mucronulate apex, glabrous. Inflorescence terminal in cymose panicles, more or less hairy-pubescent. Bracts narrow 2–4 mm long and less than 1 mm wide. Flowers 8–10 mm long, 3–5 mm wide; pedicel 0–1.5 mm long. Calyx 5–6 mm long, 4-lobed, sometimes fail to separate regularly; lobes 1–1.5 mm long, shortly pubescent outside, densely hirsute inside, margin yellowish, persistant. Corolla 8–9 mm long (including lobes), lobes 4, c. 2.5 mm long, tip somewhat deltoid, hirsute on the outside with retrose hairs. Stamens exerted; filaments slender, glabrous, 4–4.5 mm long; pollen grains smooth, 3-colpate. Ovary 1–1.5 × 0.75–1 mm, ovoid, longily hirsute on the upper half, lower glabrous, 2-celled; style slender, 6–6.5 mm long (including stigma). Capsule c. 4 mm long, obovate surrounded by persistant corolla base, hirsute at the apex, septicidally 2-valved, valves bifid. Seeds numerous, less than 0.5 mm long. Flowering period: March to September.

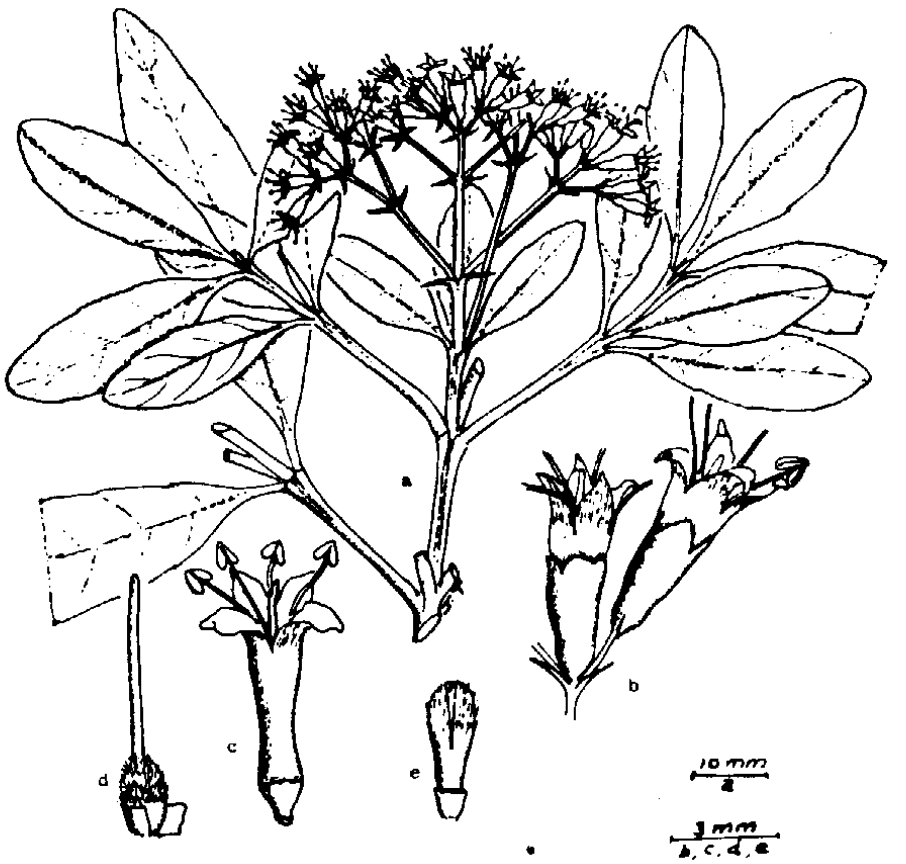


Fig. 1. *N. congesta* Fresen.: a. Flowering twig; b. Flowers; c. Corolla with stamens; d. Pistil with persistent corolla base; e. Capsule

Specimens examined: 2 km W. Sha'ar, S. Abha, 13-4-1982, U. Baierle, P. Konig, KSUH-904; Abha, 18-8-1982, H.M. Hassan, KSUH-857; Rd. from Wahabat to Fasshah, 11-3-1985, I.S. Collenette (5137), RIY-5920.

Distribution: South western parts of Saudi Arabia, from 2000 to 3000 m. An aggregate species, previously split into many species.

2. *N. oppositifolia* (Hochst.) Benth. in DC., Prodr. 10: 435 (1846); Bruce, E.A. & Lewis, J., Fl. Trop. E. Afr., Loga.: 43 (1957). Fig. 2.

Fig. 2. *N. oppositifolia* (Hochst.) Benth.: a. Flowering branch; b. Flower; c. Calyx; d. Pistil with persistent corolla base; e. Capsule; f. Capsule L.S.

Type: Ethiopia, Tigre, Schimper 1714 (K, iso.!)

Syn.: *Lachnopylis oppositifolia* Hochst. in Flora 26: 77 (1843); Migahid, A.M.,Fl. Sau. Arabia, vol 1: 395 (1978); Andrews, F.W., Fl. Pl. Sudan 2: 381 (1952); *Nuxia dentata* Benth. in DC., Prodr. 10: 435 (1846); Baker, J.G. in Thiselt-Dyer, Fl. Trop. Afr., 4(1): 513 (1903).

Tree, 9-15 m. tall; stem glaucescent or glabrous. Leaves 9-13 × 2-2.5 cm, opposite, decussate, distinctly petiolate; lamina narrow, cuneate at the base, apex subacute, mucronulate, bluntly serrate, glabrous. Panicle terminal and lateral. Flowers 8-10 × 3-5 mm, subsessile. Bracts narrow 4-6 mm long, 0.5–0.75 mm wide. Calyx 3.5–4 × 1.25 – 1.5 mm, densely villous inside, glabrous outside. Corolla 5-6 mm long, funnel shaped; lobes 1.75–2 ×1-1.25 mm, more or less spathulate, obtuse, glabrous outside. Filaments 3.5–4 mm long, filiform, glabrous. Ovary subglobose, 1-1.25 mm in diameter, hirsute on the upper half; style filiform, 6-7 mm long. Capsule 2-2.5 mm long, hirsute on top. Seeds numerous, oblong, c. 0.5 mm long. Flowering period-April to August.

Specimens examined: Al Ma'aqas, S. of Abha, 16-4-1982, U. Baierle, H.M. Hassan, P. Konig, KSUH-867; Grandi Lavori Rd., near Baljurshi, 1-6-1990, I.S. Collenette (7599), RIY-13567; Wadi Al-Baw, Taif, 13-7-1987, A.R. Al-Zamil no. RIY-11820.

Distribution: South western parts of Saudi Arabia. Migahid reported *Lachnopylis oppositifolia (= N. oppositifolia)* from North Western Hijaz area. Geographical distribution of this taxon and the diverse climatic conditions of the North western region and the South Western mountainous regions give the impression that the distribution of this genus in Saudi Arabia is limited to the south-western parts only. Since the author has not seen any authentic herbarium sheet from the northern part of Saudi Arabia, it could possibly be collected from the northern edges of the South Hijaz.

Another important member of this taxon belonging to the Sudano-Deccanian region (Sudanian region according to Mandaville [9]) is *N. floribunda* Benth. So far it is reported from the East African countries only. It closely resembles *N. oppositifolia* in many characters but differ from the latter by the acute, acuminate leaves and the glabrous ovary and capsule.

Acknowledgement. I would like to thank the Curator of the National Herbarium, Prof. Shaukat A. Chaudhary for providing herbarium materials. The author is also indebted to Mr. Jacob Thomas for the preparation of sketches.

References

[1] Shaw, H.K.A. *A Dictionary of the Flowering Plants and Ferns.* Cambridge: Cambridge University Press, 1985.
[2] Heywood, V.H. *Flowering Plants of the World.* Oxford: Oxford University press, 1978.
[3] Andrews, F.W. *The Flowering Plants of the Anglo-Egyptian Sudan,* Vol. II. Scotland: T. Buncle & Co. Ltd., 1952.
[4] Baker, J.G. in Thiselton-Dyer (Ed.). *Flora of Tropical Africa,* Vol. IV. Kent: L. Reeve & Co. Ltd., 1904.
[5] Blatter, E. *Flora Arabica,* Vol. VIII, No. 1. Calcutta: Records of the Botanical Survey of India, 1919.
[6] Migahid, A.M. *Flora of Saudi Arabia,* Vol. II, 3rd ed. Riyadh: University Libraries, King Saud University, 1989.
[7] Collenette, S. *An Illustrated Guide to the Flowers of Saudi Arabia.* London: Scorpion Publishing Ltd., 1985.
[8] Bruce, E.A. and Lewis, J. *Flora of Tropical East Africa Loganiaceae.* London: Crown Agents for Overseas Governments and Administrations, 1957.
[9] Mandaville, J.P. "Studies in the Flora of Arabia XI: Some Historical and Geographical Aspects of a Principal Floristic Frontier." *Notes from the Royal Botanical Garden, Edinburgh,* 42, No. 1 (1984), 1-15.

دراسة تصنيفية للجنس نوكسيا في المملكة العربية السعودية

أحمد حمد الفرحان

قسم النبات والأحياء الدقيقة، كلية العلوم، جامعة الملك سعود، ص. ب ٢٤٥٥، الرياض ١١٤٥١، المملكة العربية السعودية

(سُلِّمَ في ٥ محرم ١٤١٣هـ، وقُبل للنشر في ٢ ربيع الآخر ١٤١٣هـ).

ملخص البحث. لقد تمت مراجعة الجنس نوكسيا التابع للفصيلة البودلاجاسية *Nuxia* Com. ex Lam. (Buddle-jaceae) يتضمن البحث وصفًا ومفتاحًا للأنواع لتيسير تعريفها، كما تبين الدراسة التوزيع الجغرافي للأنواع المدروسة ومقارنة لها مع بعض عناصر الفصائل الأخرى الموجودة في المملكة العربية السعودية. أحد النوعين المدروسين *N. congesta* Fresen يسجل لأول مرة في فلورا المملكة العربية السعودية.