

NOTES ON RECOLLECTION OF THREE LESS KNOWN ENDEMIC PLANTS OF ARUNACHAL PRADESH

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During study of the specimens collected from the Kane Wild Life Sanctuary of West Siang district of Arunachal Pradesh, the first author collected three interesting specimens, which are identified as *Globba rubromaculata*, *Sonerilla arunachalensis* and *Sardiria erecta* var. *longipetiolata*. The Kane Wild Life Sanctuary lies between 94°55' - 94°63' between 27°33' - 28°35' and encompasses an area of 55 sq km in the Likabali forest range of Along forest division in West Siang district. The area is the entrance point to the state of Assam and comes under the tropical semi-evergreen forest type. The Sanctuary is bounded by Likabali forest range in three directions namely north, south and west and by the Dipa Forest range in the east. The boundary of the sanctuary is mainly determined by the two rivers 'Inche' and 'Inte' which flow around the sanctuary. The nearest approachable route to the sanctuary involves about 13 kms tough trekking towards the western direction from the main Likabali-Along state highway near 'Magge' village. The terrain is entire hilly, broken by three rivers, 'Ghai', 'Inche' and 'Inte'. The altitude of the area ranges between 250 - 650 msl. The flora of the Kane Wild Life Sanctuary is very luxuriant and shows a maximum diversity. On perusal of the available literature (Hajra & al. 1996; Chauhan 1997; Nayar & Sastry 1987, 1988, 1990, Nayar 1996) and herbarium specimens in ARUN, it revealed that all the three species are endemic to the state and have never been collected after the type collection. The type localities are different from the locality of the present collection. This collection other than the type locality confirms that the species has a wide distribution in Arunachal Pradesh in similar geographical locations and might be native to this region. These little known endemic species are described here with a short description emphasizing the differences with the original, critical field notes, associated species, and photo images for better understanding.

1. *Globba rubromaculata* J. Lal & D.M. Verma, Bull. Bot. Surv. India 29 (1-4): 26.1987.

Perennial herbs, 1-2.5 m high. Stem rounded, green. Leaves sessile, oblong or elliptic lanceolate, 17-28 × 4.5-7 cm, cuneate at base, entire, acuminate at apex, upper surface glaucous, minutely hairy beneath, ligules short, exceedingly hairy. Inflorescence a terminal raceme, peduncles 25-30 cm long, bracts early deciduous; peduncles puberulent or glabrous, lower part of the peduncles bearing bulbils; flowers saffron yellow, pedicels c.1 cm long; calyx tubular, 3-toothed, c.1 cm long; corolla tube slender, 1.5-2 cm long, lobes elliptic oblong, posterior lobe longer, lateral lobes included, concave and apiculate; lateral staminodes spatulate, c.5 mm long, lip inserted above the staminodes, deflexed, c.1 cm long, deeply bilobed, conspicuous with two red blotches, filaments curved, 1-2 cm long, anthers not winged. Fruits subglobose, surface verrucose, c.1.5 cm long, leathery. Seeds brownish, glabrous, suspended in gelatinous hyphae like mass.

Notes: The species is similar to the *Globba multiflora* Wall. ex Baker and distinguished from it by yellow saffron flowers with two red blotches in the lateral staminode. The present communication is supplemented by a photo of the flowers, fruits showing the clear verrucose nature, and bulbils in the lower part of the inflorescence, which are the most unique field characters for identification. In addition, this communication enriches the original description by providing the information on seeds, which is round and brown when young, and black on maturity. While going through the type specimens deposited at ARUN, it revealed that, the collections contained only immature fruit and seeds. The present collection is having a mature fruit as well as seed where the verrucose nature is clearly distinguished and the colour of the seeds can be distinctly seen. The size of the fruits in the present collection (S.S. Dash 32225; ARUN) is larger and differs from the type (Isotype: Itanagar, Ganga lake area, 450 m, J.Lal 2201B, in ARUN) and this may be attributed to the physical condition of the soil.

2. *Sonerila arunachalensis* G.S. Giri, A. Pramanik & H.J. Chowdhery, Ind. J. For. 15(1): 95-96.1992.

Small herbs, 10-20 cm high, stem terete, densely covered with spreading hairs. Leaves fascicled towards the apex, ovate to ovate-elliptic, $2-5 \times 1.5-4$ cm, cordate at base, serrulate at margin, ciliate with whitish hairs, acute at the apex, lateral veins 5-6 arises from the base, runs along the margin to reach apex, sparsely whitish hairy above, more dense along the veins beneath; petioles slender, easily breakable, densely covered by whitish hairs. Flowers in terminal scorpioid panicles, peduncles c.4cm long, covered by dense hairs. Flowers pink, subsessile, 4-7-flowered; calyx tube c.1.5 cm long, creamy white, whitish hairy outside, sepals 3, triangular ovate; petals 3, ovate-oblong, $0.7-1.1 \times 0.4-0.7$ cm, with a band of hair on the midrib, mid-rib depressed; stamens 3, filaments filiform, 5-7 mm long, anthers sickle shaped, attenuate at both the ends, stigma capitate.

Notes: The species was described by Giri & al. (1992) based upon a collection from Mehao Wild Life Sanctuary of Dibang Valley district {Mehao Wild Life Sanctuary, 1500, 15.9.90. A. Pramanik 5438 (ARUN) Isotype}. The present collection from the Kane Wild Life Sanctuary, S.S.Dash 32062 (ARUN) is the first recollection after the type and from a different locality at an altitude of 700 msl. The paratype (G. Panigrahi 14973 in CAL) is collected from Wakka forest area (27th Aug. 1958) of Lower Subansiri district of Arunachal Pradesh. The species is easily recognized in the field by the presence of pink flowers, sickle shaped anthers in filiform filaments and presence of whitish hairs throughout. The present collection differs from the type collection by the presence of white ferruginous hairs (brown hairs in the protologue). The presence of ferruginous hairs throughout the plant is the main distinguishing character to delimit the allied species viz. *Sonerila maculata* Roxb. and *Sonerila khasiana* C.B. Clarke which are also expected to occur in this region.

3. *Sadiria erecta* (C.B.Clarke) Mez, var. ***longipetiolata*** G.S. Giri, G.D. Pal & H.J. Chowdhery, Ind. J. For. 15(1): 95-96.1992.

Erect shrubs, up to 1.5 m high, branches terete, grayish. Leaves alternate, elliptic lanceolate or oblong-lanceolate, $7-14 \times 3-5$ cm, cuneate at base to a decurrent petiole, crenate-dentate at margin, midveins raised, lateral veins c.18 pairs, reaching to the margins, reticulation conspicuous beneath, glabrous above and minutely rusty pubescent beneath, petioles 1-1.5 cm long. Inflorescence axillary panicles umbellate, peduncles c.1.5 cm long; bracts ovate-lanceolate, acute at apex; calyx segments 5, lanceolate, acute at apex, c. 2×0.7 mm, glabrous; corolla tubular, c. 2 mm long, lobes ovate or ovate-lanceolate, acute, whitish; stamens 5, sessile, attached at the base, filaments glabrous, anthers gland dotted; ovary ovoid or globose.

Notes: This new variety was described from the collection of A.R.K. Sastry from Amjee locality, (8 km from Begi) in the Lower Subansiri district of Arunachal Pradesh at an altitude of 1400-1500 m. The present collection (S.S.Dash 32137 in ARUN) is the first report of recollection of the variety after the type collection in 1964 after a gap of 45 years from the Kane Wild Life Sanctuary of West Siang district. The plant is rarely found in the moist and shady localities in a mountain cliff along the 'Inte' river. The species is easily recognized by its raised dentate margin and peculiar lateral veins.

It is interesting to observe that, all the above endemic species were found in the same locality i.e. Kane Wild Life Sanctuary. Collection of these endemic species from the sanctuary confirms that the area might be supported by many endemic and rare plants that have survived due to protective natural barriers.

Biotic association : Trees like *Castanopsis indica* (Roxb.) A. DC., *Ditperocarpus retusus* Bl., *Elaeocarpus* sp., *Gynocardia odorata* R. Br., *Knema angustifolia* (Roxb.) Warb., *Litsea monopetala* Pers., *Phoebe lanceolata* Nees, *Saurauia napaulensis* DC., *Styrax serrulatum* Roxb., *Terminalia myriocarpa* Heurck & Muell.- Arg. *Trevesia palmata* (Roxb.) Vis. are the common trees found in the locality. The main shrubby elements found in the locality are *Boehmeria macrophylla* D.Don, *Chloranthus elatior* R. Br. ex Link, *Debregasia longifolia* (Burm.f.) Wedd., *Maesa indica* (Roxb.) Wall., *Meyna spinosa* Roxb. ex Link. *Micromelum integerrimum* (Roxb.) Roem, and *Morinda angustifolia* Roxb., *Mussanda incana* Wallich, *Oxyspora paniculata* DC., *Pseudobrassia hispida* (Seem.) R.N.Banerjee, and *Osbeckia nepalensis* Hook. The association in the ground flora forms the main group for these endemic plants. The important associated ground vegetation found around the collected localities are *Amischotolype mollissima* (Blume) Hassk., *Chirita macrophylla* Wallich, *Hedyotis verticillata* (L.) Lam., *Poikilospermum naucleiflorum* (Roxb.) Chew, *Polia hassakarlii* R. Rao, and *Rhynchoglossum obliquum* Blume While the



Flowers of *Globba rubromaculata* J.Lal & D.M.Verma
showing two red blotches in the lateral staminodes.



Flowers of *Sonerila arunachalensis*
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Globba rubromaculata J.Lal & D.M.Verma



Globba rubromaculata J.Lal & D.M.Verma : fruits



Globba rubromaculata J.Lal & D.M.Verma :
showing germinated bulbils



Sonerila arunachalensis
G.S. Giri, A. Pramanik & H.J. Chowdhery

main epiphytic plant found are *Aeschynanthus bracteatus* Wallich, *Agapetes incurvata* (Griff.) Sleumer, *Rhaphidophora hookeri* Schott.

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