

CONTRIBUTION TO *LITSEA* LAM. (LAURACEAE) IN NORTHEAST INDIA

T. BHUINYA AND P. SINGH

Botanical Survey of India, C.G.O. Complex, Salt Lake City, Kolkata-700064

Distribution of 10 species of *Litsea* Lam. in different states of northeast India has been reassessed in the present paper. Correct nomenclature, citation, distribution, specimens examined and notes have been provided for each species. Of these 7 species from Arunachal Pradesh, 3 from Meghalaya, 1 from Manipur, 2 from Mizoram and 3 from Nagaland are recorded for the first time.

1. ***Litsea assamica*** (Meisn.) Hook. f., Fl. Brit. India. 5: 161. 1886; Kanjilal & al., Fl. Assam 4: 85. 1940. *Tetranthera rangoonensis* Meisn. var. *assamica* Meisn. in DC. Prodr. 15 (1): 188. 1864.

Habitat : Evergreen forests, in low hills of northeastern India.

Distribution : India: Arunachal Pradesh, Assam, Meghalaya. Endemic.

Specimens examined : Arunachal Pradesh, Tirap district, Banfera FD, 3-9-1958, G. Panigrahi 16705, frts (CAL); Banfera, 13-7-1961, D.B. Deb 26705, frts (ASSAM, CAL); Meghalaya, Khasi & Jyntea Hills, 5-2-1915, U. Kanjilal 116P, male fls (ASSAM).

Notes : The species was recorded from Assam plains (Hooker 1886; Kanjilal & al., 1940) based on two collections of Jenkins and Griffith. It was collected from Arunachal Pradesh and Meghalaya by Deb and Kanjilal but wrongly identified as *Litsea oblonga* Wall. It has been for the first time recorded from these two states.

2. ***Litsea chartacea*** (Wall ex Nees) Hook. f., Fl. Brit. India. 5: 170. 1886; Allen in Ann. Missouri Bot. Gar. 25: 377. 1938; Hara, Enum. Fl. Pl. Nepal 3: 185. 1982. D.G. Long in Grierson & D.G. Long, Fl. Bhutan 1(2): 275. 1984. *Tetranthera chartacea* Wall. ex Nees in Wall., Pl. As. Rar. 2: 67. 1831 & 3: 30. 1831.

Fl.: December to March; *Fr.*: February to June.

Habitat : Warm broad-leaved evergreen forests, from 1500 m to 1800 m.

Distribution : India: Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, West Bengal. Bhutan, China, Nepal.

Specimens examined : Arunachal Pradesh, Lower Dibang Valley district, Mishmi hill, Parasuram Road, 3-2-1939, R. N. De 19176, buds (ASSAM); Lower Subansiri district, Pange, 2-11-1980, G. D. Pal 78408, buds (ARUN); Chessa, 8-5-1984, K. Haridasan 0375, frts (APFH); Tirap district, 13-6-1983, K. Haridasan 0663, frts (APFH); West Kameng district, Tippi, Deomali, Hollong forest, 12-6-1983, K. Haridasan 0670, frts (APFH); Assam, Sibsagar district, Chamugun, 280 ft, 15-12-1913, U. Kanjilal 122M, male buds (ASSAM); Meghalaya, East Khasi Hills district, Mawmsai forest, 11-11-1938, R. N. De 18100, buds (ASSAM); Mawmsai forest, 11-11-1938, S. R. Sharma 18264, male buds (ASSAM); Ri-Bhoi district, Nongpoh, 2100 ft, 01-06-1914, U. Kanjilal 3999, frts (CAL); West Garo Hills district, Tura Top, 366.6 m-1294.6 m, 12-12-1960, G. Panigrahi 22374, male fls (ASSAM); Mizoram, Mizo hills, D. B. Deb 30909, male fls (ASSAM).

Notes : Earlier the species was reported from Sikkim and West Bengal (Hooker, 1886; Long & Grierson, 1984) in eastern Himalayas but present study reveals that it is also a component of the Flora of Arunachal Pradesh, Meghalaya and Mizo hills. Most of specimens in herbaria are wrongly identified as *L. laeta* (Wall. ex Nees) Hook. f. which has more coriaceous leaves and longer umbel peduncles.

3. ***Litsea doshia*** (Buch - Ham. ex D. Don) Kosterm. in J. Sci. Res. Indonesia 1: 90. 1952. *Tetranthera doshia* Buch - Ham. ex D. Don, Prodr. Fl. Nepal. 65. 1825. *Litsea oblonga* (Wall. ex Nees) Hook. f. Fl. Brit. India. 5: 168. 1886; Kosterm. Bibl. Laur. 856. 1964; Momiyama in Fl. E. Him. 3: 42. 1975; Kanjilal & al., Fl. Assam 4: 88. 1940.

Fl.: September to January; *Fr.*: December to April.

Habitat : Evergreen and mixed forests at an altitude of 1300 – 2700 m.

Distribution : India : Arunachal Pradesh, Assam, Meghalaya. Myanmar, Nepal.

Specimens examined : Arunachal Pradesh, Lower Subansiri district, Hapoli-Pange Road, 31-10-1980, *G. D. Pal* 78381, buds (ARUN).

Notes : The species was reported from Assam and Meghalaya (Kanjilal & al., 1940). It is mostly confused with *L. salicifolia* (Roxb. ex Nees) Hook. f. which has umbels arising in clusters and not in racemes. It is reported from Arunachal Pradesh for the first time.

4. ***Litsea kingii*** Hook. f., Fl. Brit. India. 5: 156. 1886; Kanjilal & al., Fl. Assam 4: 81. 1940; Hara, Fl. E. Himal. 1:102. 1966; 2: 39. 1971; D.G. Long in Grierson & D.G. Long, Fl. Bhutan 1(2): 274. 1984.

Fl. : March to July; *Fr.*: May to December.

Habitat : Cool broad-leaved and Rhododendron forests at an altitude of 1800 - 2900 m.

Distribution : India : Arunachal Pradesh, Meghalaya, Sikkim, West Bengal. Bhutan, Myanmar, China, Nepal.

Specimens examined : Arunachal Pradesh, Changlang district, Namdapha, Gandhigram, January 1994, *A. S. Chauhan* 99635, male buds (ASSAM); Kameng district, 4.5-5 miles from Dynkmadong, 20-5-1965, *R.S. Rao* 7634, frts. (CAL); Lohit district, Hayuliang, 15-11-1983, *K. Haridasan* 0074, buds (APFH); Metangliang, 23-3-1986, *K. Haridasan* 2882, buds (APFH); Lower Subansiri district, Drupang, 10-3-1983, *Buru Loda* 0551, buds (APFH); Old Ziro-Begi Road, s. date, *G. D. Pal* s.n., frts (ARUN); Dibang Valley, Desali, 14-3-1984, *K. Haridasan* 0794, buds (APFH).

Notes : The species is mostly confused with *L. cubeba* (Lour.) Pers. *L. kingii* Hook. f. is deciduous, and found to grow in cool broad-leaved coniferous forests at 1800 m to 2900 m whereas *L. cubeba* (Lour.) Pers. is evergreen, growing in sub-tropical and warm broad-leaved forests at 300 m to 1800 m. Moreover, leaves are more acute and elliptic in *L. kingii* Hook. f., branches stouter, leaf petiole shorter, umbel pedicel more stout, winter buds present, leaves thinly coriaceous while they are membranous in *L. cubeba* (Lour.) Pers. It has been aptly said by Kanjilal (1940) that "...the points of distinction (between *L. cubeba* and *L. kingii*) merge in intermediate forms". The species was known from Meghalaya (Kanjilal & al., 1940), Sikkim and West Bengal (Hooker, 1886; Long, 1984). Here, the species is reported for the first time from Arunachal Pradesh.

5. ***Litsea laeta*** (Wall. ex Nees) Hook. f., Fl. Brit. India. 5:169.1886; Kanjilal & al., Fl. Assam 4: 88. 1940; N.P. Balakr., Fl. Jowai 2: 403. 1983; D.G. Long in Grierson & D.G. Long 1984, Fl. Bhutan 1(2): 275. 1984. *Tetranthera laeta* Wall. ex Nees in Wall. Pl. As. Rar. 2: 67. 1831.

Fl.: November to February; *Fr.*: January to June.

Habitat : Evergreen and mixed forests from 300 - 900 m.

Distribution : India : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim, West Bengal. Bhutan, Nepal.

Specimens examined : Manipur, Soanac, 26-11-1885, 4000ft, *C. B. Clarke* 42152, frts; Mizoram, Mizo hills, *D. B. Deb* 30686, female fls (ASSAM); Nagaland, Naga Hills, June 1935, *N. L. Bor* 21168, male fls (ASSAM); *N. L. Bor* 17418, male fls (ASSAM).

Notes : The species is a common element of the Eastern Himalayas and is reported from Arunachal Pradesh, Assam, Meghalaya (Kanjilal & al., 1940) and Sikkim (Long, 1984), Tripura (Deb, 1981) and West Bengal. Herbarium study reveals that it is also present in Manipur, Mizoram and Nagaland.

6. ***Litsea nitida*** (Roxb. ex Nees) Hook. f. Fl. Brit. India. 5:174.1886; Prain, Bengal Pl. 2: 676. 1903; Haines, Bot. Bihar & Orissa 795. 1924; Kanjilal & al., Fl. Assam 4: 90. 1940; Mooney, Suppl. Fl. Bihar & Orissa 131. 1950. *Tetranthera nitida* Roxb. ex Nees in Wall. Pl. As. Rar. 2: 67. 1831; 3: 31. 1832.

Fl.: August to November; *Fr.*: October to April.

Habit : Tropical forests.

Distribution : India : Arunachal Pradesh, Assam, Bihar, Nagaland, West Bengal. Bangladesh, Myanmar, Nepal.

Specimens examined : Arunachal Pradesh, Lower Subansiri district, Doimukh, 18-4-1978, *G. D. Pal* 75871, buds (ARUN); Nagaland, Aka Hills, *N. L. Bor* 18961, buds (ASSAM, CAL).

Notes : The species was reported from Bihar (Haines, 1924), West Bengal (Prain, 1903) and Assam (Hooker, 1886; Kanjilal & al., 1940). Its distribution is reported here from Arunachal Pradesh and Nagaland.

7. ***Litsea panamanja*** (Nees) Hook. f., *Fl. Brit. India*. 5: 175. 1886; Prain, *Bengal Pl.* 903. 1903; Parkinson, *For. Fl. Andaman Is.* 226. 1923; Allen in *Ann. Missouri Bot. Gard.* 25: 380. 1938; Kanjilal & al., *Fl. Assam* 4: 90. 1940. *Tetranthera panamanja* Nees in *Wall., Pl. As. Rar.* 2: 67. 1831.

Fl.: March to June; *Fr.*: July to October.

Habitat : Subtropical forests of Himalayas, 300 – 700 m and in Andaman islands.

Distribution : India : Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Nagaland, Sikkim, Tripura, West Bengal. Bhutan, Myanmar.

Specimens examined : Arunachal Pradesh, Tirap district, Ninsa to Wanu, 1141m, 1-9-1958, *G. Panigrahi* 15015, female buds (CAL, ASSAM); Nagaland, Naga Hills, June 1936, *N. L. Bor* 21166 (ASSAM).

Notes : The species was earlier reported from Assam (Hooker 1886; Kanjilal & al. 1940) and Tripura (Deb, 1981) in northeast India. It is reported now to Arunachal Pradesh and Nagaland.

8. ***Litsea sericea*** (Wall. ex Nees) Hook. f., *Fl. Brit. India* 5: 156. 1886; Allen in *Ann. Missouri Bot. Gard.* 25: 369. 1938; Kanjilal & al., *Fl. Assam* 4: 82. 1940; Hara, *Fl. E. Himal.* 1: 102. 1966, 2: 39. 1971; 3: 186. 1982. *Tetranthera sericea* Wall. ex Nees in *Wall., Pl. As. Rar.* 2: 67. 1831.

Fl.: April to November, *Fr.*: September to December.

Habitat : Temperate forests, from 2000 – 3100 m.

Distribution : India : Arunachal Pradesh, Manipur, Sikkim, West Bengal. Bhutan, Myanmar, China, Nepal.

Specimen examined : Arunachal Pradesh, Lohit district, Mailong, 1800 m, *s. coll.* 2338, buds (APFH).

Notes : Hooker (1886) and Kanjilal & al. (1940) recorded the species from Manipur and Long (1984) from Sikkim. The species is reported for the first time from Arunachal Pradesh.

9. ***Litsea thomsonii*** (Meisn.) Hook. f., *Fl. Brith India* 5: 170. 1886; Kanjilal & al., *Fl. Assam* 4: 89. 1940. *Tetranthera thomsonii* Meisn. in *DC., Prodr.* 15 (1): 183. 1864.

Fl.: September to January; *Fr.*: January to April.

Habitat : Evergreen and mixed forests of low hills in northeast India.

Distribution : India: Assam, Meghalaya. Bangladesh.

Specimens examined : Meghalaya, Nondongiri, 300 m, 30-11-1996, *Shankar Das* 105221, frt (ASSAM); Khasi Hills, 10 km point on way to Mawsynram from Balak, 9-5-1975, *G. K. Bhaumik* 62093, frt (ASSAM); Khasi & Jaintea Hills, between Nongpoh and Umling, 1700 ft, 2-6-1914, *U. Kanjilal* 4008a, buds (ASSAM); Khasi Hills, Nongpoh, 1820 ft, 30-5-1914, *U. Kanjilal* 3975, female fls (ASSAM); Khasi & Jaintea Hills, near the village Tuber, 1450 m, 24-7-1965, *N. P. Balakrishnan* 42934 (ASSAM); Khasi & Jaintea Hills, above Mahadeo, 3200 ft, 19-10-1914, *U. Kanjilal* 4625, frt (ASSAM); Khasi & Jaintea Hills, 39 miles, G. S. Road, *Shri Ram Sharma* 13278, female buds (ASSAM); Khasi & Jyntea Hills, 37 miles G. S. Road, 6-6-1914, *U. Kanjilal* 4048, male buds (ASSAM).

Notes : The species was recorded from Bangladesh (Hooker, 1886) and Sibsagar in Assam (Kanjilal & al., 1940). Presently it is reported from Khasi, Jaintia and Garo hill tracts in Meghalaya. All these specimens were wrongly identified as *L. laeta* (Wall. ex Nees) Hook. f. in the herbarium.

10. ***Litsea lancifolia*** (Roxb. ex Nees) Hook. f., Fl. Brit. India. 5: 159. 1886; Prain, Bengal Pl. 902. 1903; Allen in Ann. Missouri Bot. Gar. 25: 395. 1938; Kanjilal & al., Fl. Assam 4: 84. 1940; Kosterm., Bibl. Laur. 837. 1964; Haridasan & Rao, For. Fl. Meghalaya 2: 731. 1987. *Tetranthera lancifolia* Roxb., ex Nees in Wall., Pl. As. Rar. 2: 65. 1831.

Fl.: January to May; *Fr.*: May to September.

Habitat : Tropical and Sub-tropical forests of Eastern Himalayas and hills of northeast India.

Distribution : India : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal. Bhutan, China, Myanmar, Nepal.

Specimen examined : Nagaland, Jabocka, 4000 ft, April 1899, *Dr. Prain's collector* 946, female fls. (CAL).

Notes : This is the only species of *Litsea* Lam. from the northeast India that possesses opposite leaves. Hence it is easily distinguished from other species. It was reported from Arunachal Pradesh, Assam, Meghalaya (Hooker, 1886; Kanjilal & al., 1940; Haridasan & Rao, 1987) and West Bengal (Prain, 1903). Presently it is reported from Nagaland based on Prain's collection.

ACKNOWLEDGEMENTS

Authors are thankful to the Director, Botanical Survey of India, Kolkata. For facilities and award of Flora of India Research fellowship to one of us (TB). The permission by the keepers to consult herbaria at APFH, ASSAM and CAL. is gratefully acknowledged.

REFERENCES

- DEB, D. B. 1981. *Litsea* Lam. In: Flora of Tripura 1: 88 - 97. Today & Tomorrow's Print. & Pub., New Delhi.
- LONG, D. G. 1984. *Litsea* Lam. In: Flora of Bhutan 1(2): 271-278. R.B.G., Edinburgh.
- HOOKE, J. D. 1886. *Litsea* Lam. In: Flora of British India 5: 111-180. Reeve & Co., U.K.
- HAINES, H. H. 1924 (Repr. ed. 1961). *Litsea* Lam. In: The Botany of Bihar & Orissa 3: 830-834. B.S.I., Calcutta.
- HARA, H., A. O. CHARTER AND L. H. J. WILLIAMS. 1982. *Litsea* Lam. In: An Enumeration of the Flowering Plants of Nepal 3: 185 -187. London.
- HARIDASAN, K. AND R. R. RAO. 1987. *Litsea* Lam. In: Forest Flora of Meghalaya 2: 72 8-733. Dehradun.
- KANJILAL, U. N., P. C. KANJILAL, R. N. DE AND A. DAS. 1940. *Litsea* Lam. In: Flora of Assam 4: 78-92. Prabasi Press, Shillong.
- PRAIN, D. 1903. *Litsea* Lam. In: Bengal Plants: 902. (Repr. ed. 1963) Botanical Survey of India, Calcutta.