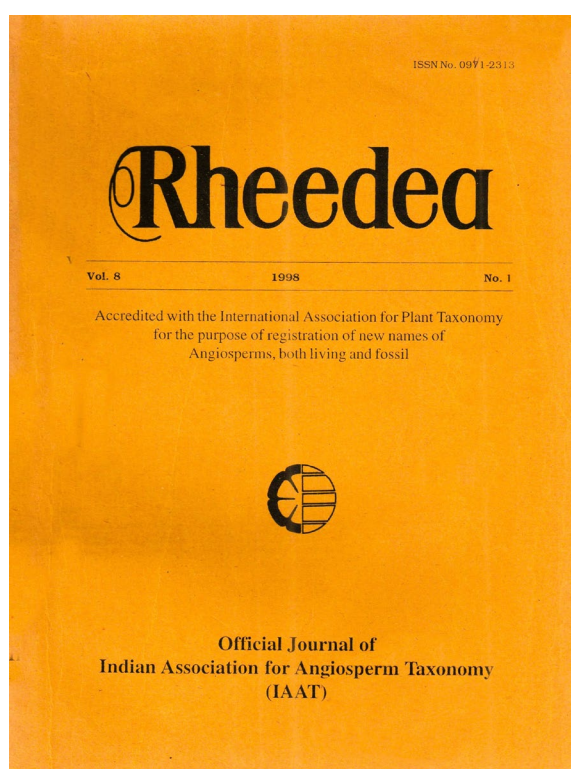




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The genus *Lipocarpha* R. Br. (Cyperaceae) in Andhra Pradesh, India

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Abstract

The genus *Lipocarpha* R. Br. (Cyperaceae) is surveyed for Andhra Pradesh, India. Six species of the genus viz., *L. chinensis* (Osbeck) Kern, *L. hemisphaerica* (Roth) Goetghebeur, *L. kernii* (Raymond) Goetghebeur, *L. reddyi* S.S. Hooper, *L. sphacelata* (Vahl) Kunth and *L. squarrosa* (L.) Goetghebeur are reported from the state. Of these, *L. hemisphaerica* and *L. kernii* are new records.

INTRODUCTION

Lipocarpha R. Brown (1818) is the sedge genus conserved against its counterpart, *Hypaelyptum* Vahl (1805). Brown (1810: 219), being aware of the problems with the latter, tried to include the species with dorsiventrally placed scales under *Hypaelyptum* and exclude those with lateral scales to *Hypolytrum*. A few years later, Brown (1818) created a completely new genus, *Lipocarpha*, for the former group to avoid further confusion.

After examining the taxonomic history of *Hemicarpha* Nees (1834) and *Rikliella* Raynal (1973), Goetghebeur and van den Borre (1989) decided to merge them under *Lipocarpha* R. Br. (loc.) on account of the common possession of a highly reduced type of inflorescence with dense spikes of many one-flowered spikelets and due to the lack of any other individual synapomorphy. Such a contention gets support from the work of Ragan (1994) on the secondary metabolites of these taxa. In the light of this new concept of the genus, *Lipocarpha* R. Br. is surveyed, reviewed and presented here as part of a precursor to the "Sedge flora of Andhra Pradesh".

Fischer (1931) has not reported any species of the genus *Lipocarpha* from Andhra Pradesh. *L. chinensis* (Osbeck) Kern and *L. sphacelata* (Vahl) Kunth [*L. triceps* (Roxb.) Nees] were reported from other parts of Madras Presidency (Fischer, l.c.).

Fischer (1931) reported *Scirpus squarrosus* L. (Mant. Pl. 2: 181. 1771) to be a common weed in all districts of Madras Presidency, south of Mysore. It is found to be widespread in Andhra Pradesh. Of late, in all Indian floras, this species is treated under

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Rikliella J. Raynal. However, as per the present study and that by Goetghebeur and van den Borre (1989), it is also treated as a species of *Lipocarpha*.

Another species of *Scirpus*, namely *S. isolepis* (Nees) Boeck., which rightly belongs to *Lipocarpha* (Haines & Lye, 1971; Goetghebeur & van den Borre, 1989) is known from Mysore in southern India (Fischer, 1931). We collected it for the first time from Niral in Adilabad district of Andhra Pradesh.

Yet, another taxon, namely *Rikliella kernii* (Raymond) J. Raynal which is thus far known from Karnataka (Hooper, 1976) and Tamil Nadu (Raju, 1988) in southern India is also a species of *Lipocarpha* (Goetghebeur & van den Borre, 1989). Now, it is collected from Adilabad district of Andhra Pradesh.

Earlier, Hooper (1986) described a rare and interesting species, viz., *Lipocarpha reddyi* from Nalgonda district of Andhra Pradesh.

Thus, out of the nine species of *Lipocarpha* which are known from Asia (Goetghebeur & van den Borre, 1989), six of them occur in Andhra Pradesh. *L. pygmaea* Kern and *L. raynaliana* Govindarajalu are the other two species of *Lipocarpha* which have been found to occur in India. Apart from updating their nomenclature and furnishing district-wise distributional data, a detailed key is provided to identify these taxa. The specimens cited in this paper are available at MH and KUH, unless otherwise stated.

Key to the species

1. Spikelet prophyll and glume absent 2
 2. Inflorescence terminal; stigmata 2; achenes elliptic to narrowly rhombic in cross section; stamen 1 **L. kernii**
 2. Inflorescence pseudolateral; stigmata 3; achenes subtriquetrous in cross section; stamens 1-2 **L. squarrosa**
1. Spikelet prophyll and glume present 3
 3. Inflorescence pseudolateral; stigmata 2; spike 1; stamen 1 **L. hemisphaerica**
 3. Inflorescence terminal; stigmata 3; spikes (1) 2-10; stamens 1-2 4
 4. Plants robust, tufted perennials; spikelets 2-10; inflorescence white to creamy white with red dots; achenes trigonous in cross section, oblong to narrowly obovate **L. chinensis**

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4. Plants slender, tufted annuals; spikelets 2-4; inflorescence yellow to pale reddish-brown; achenes subtrigonus to trigonus, frontally obovate to sub-elliptical 5
5. Achenes conspicuously beaked; trigonus in cross section; frontally obovate to subelliptical; stamens 1-2; inflorescence yellowish to pale brownish (top reddish brown) **L. sphacelata**
5. Achenes shortly beaked; subtriquetrous in cross section; frontally obovate; stamen usually 1; inflorescence pale to dark reddish brown with red stripes **L. reddyi**

1. **Lipocarpa chinensis** (Osbeck) Kern in Blumea Suppl. 4: 167. 1958. *Scirpus chinensis* Osbeck, Dagbok Ostind. Resa: 220. 1757. *Lipocarpa argentea* (Vahl) R.Br. in Tuckey, Narr. Exped. Congo, App. 477. 1818; Clarke in Hook. f., Fl. Brit. India 6: 667. 1893; Fischer in Gamble, Fl. Pres. Madras 3: 1670. 1931. *Hypaelyptum argenteum* Vahl, Enum. Pl. 2: 283. 1805. *Tunga laevigata* Roxb., Fl. Indica 1: 188. 1820.

Exsicc.: Adilabad Dist., Nirmal, 11-11-1989, V.S. Raju 2155.

Distribution: Adilabad, Chittoor, East Godavari, Khammam, Vizag and Warangal.

Note: G.V. Subbarao (1979) first reported it from Visakhapatnam district in Andhra Pradesh.

2. **Lipocarpa hemisphaerica** (Roth) Goetghebeur, Wageningen Agric. Univ. Papers 89-1: 37. 1989. *Scirpus hemisphaericus* Roth, Nov. Pl. Sp. 29. 1821. *Scirpus isolepis* (Nees) Boeck. in Linnaea 36: 498. 1870; Clarke in Hook. f., Fl. Brit. India 6: 663. 1893; Fischer in Gamble, Fl. Pres. Madras 3: 1666. 1931. *Hemicarpha isolepis* Nees, Arnold Edinb. New Phil. J. 17: 263. 1834; Hooper in Sald. & Nicols., Fl. Hassan Distr. 685. 1976. *Lipocarpa isolepis* (Nees) R. Haines, Bot. Notiser 124: 476. 1971.

Exsicc.: Adilabad Dist.: Nirmal (Khanapur Road), 17-10-1989, V.S. Raju 2093.

Distribution: Adilabad. It is an addition to the flora of Andhra Pradesh.

Note: This particular species has a curious taxonomic history. The hyaline scales of its achenes alluded many a taxonomist. Ultimately, it was aptly transferred to *Lipocarpa* by Haines (Haines & Lye, 1971). However, it was Goetghebeur (*l.c.*) who established this species under *Lipocarpa*.

3. **L. kernii** (Raymond) Goetghebeur, Wageningen Agric. Univ. Papers 89-1: 42. 1989. *Rikliella kernii* (Raymond) J. Raynal, Adansonia, ser. 2, 13: 155. 1973; Hooper in Sald. & Nicols., Fl. Hassan Dist. 696. 1976; Raju, J. Swamy Bot. Club 5: 161. 1988. *Scirpus kernii* Raymond, Natur. Canad. 86: 230. 1959.

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Exsicc.: Adilabad Dist.: Nirmal (Khanapur Road); 17.10.1989, V.S. Raju 2092; Mancherial: 11-11-1989, V.S. Raju 2150.

Distribution: Adilabad.

Note: It is a new record for Andhra Pradesh.

4. **L. reddyi** Hooper, Kew Bull. 41: 427. fig. 2. 1986; Goetghebeur and van den Borre Wageningen Agric. Univ. Papers 89-1: 64. 1989.

Exsicc.: Nalgonda Dist.: Annaram: P.S. Reddy 1232 (Holotype - K; Isotype - HY - n.v.); Warangal: P.S. Reddy and T. Rajagopal 219 (K).

Distribution: Nalgonda and Warangal.

Note: It is closely allied to *L. microcephala* (R.Br.) Kunth, which is a widespread species in South-east Asia, Malaya and Australia though not so far reported from India (Hooper, l.c. 426). As per Goetghebeur and van den Borre (1989), it occurs in Orissa state as well.

5. **L. sphacelata** (Vahl) Kunth, Enum. Pl. 2: 267. 1837; Clarke in Hook. f., Fl. Brit. India 6: 667. 1893. *Hypaelyptum sphaceolatum* Vahl, Enum. Pl. 2: 283. 1805. *Lipocarpus triceps* (Roxb.) Nees in Wight, Contrib. 92. 1834; Fischer in Gamble, Fl. Pres. Madras 3: 1670. 1931; Ellis, Bull. Bot. Surv. India 8: 339. (1966) 1967. *Tunga triceps* Roxb., Fl. Indica 1: 187. 1820.

Exsicc.: Karimnagar Dist.: Akalapur, Sept. 1965, G.V. Subbarao 25658 (MH); Kurnool Dist.: Balapalli (250 m), 25-02-1963, J.L. Ellis 15785 (MH).

Distribution: Adilabad, Chittoor, Cuddapah, East Godavari, Karimnagar, Khammam, Kurnool and Warangal.

Note: Ellis (1967) first reported this species from Cuddapah district.

6. **L. squarrosa** (L.) Goetghebeur, Wageningen Agric. Univ. Papers 89-1: 71. 1989. *Rikliella squarrosa* (L.) Raynal, Adansonia, ser. 2, 13: 154. 1973. *Osolepis squarrosa* (L.) Kunth, Nov. Gen. Pl. 1: 202. 1815. *Scirpus squarrosus* L., Mant. Pl. 2: 181. 1771; Clarke in Hook. f., Fl. Brit. India 6: 663. 1893; Fischer in Gamble, Fl. Pres. Madras 3: 1666. 1931.

Exsicc.: Karimnagar Dist.: Akalapur, 1964, G.V. Subbarao 22493 (MH); Medak Distr.: Pegaragutta (713 m), 23-09-1958, K.M. Sebastine 1616 (MH).

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Distribution: Adilabad, Chittoor (Naidu, 1971), Cuddapah, East Godavari, Karimnagar, Khammam and Visakhapatnam. Perhaps it occurs all over the state.

Note: The erect larger involucral bract is often a reliable diagnostic feature for distinguishing it from that of its closely resembling species viz., *L. kernii*.

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