

## STATUS OF *CYRTOSPERMA MERKUSII* (HASSK.) SCHOTT (ARACEAE) IN SINGAPORE

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### INTRODUCTION

Species of *Cyrtosperma* Griff. are large geophytes with a creeping rhizome and are heavily armoured with prickly leaf stalks (Fig. 1) (Hettterscheid, 2008). As is presently understood, the genus consists of 11 species distributed throughout Malesia, 10 of which are found in Papuasia and *Cyrtosperma merkusii* is found in the Malay Peninsula, the Philippines, Borneo, Sumatra, Java and Oceania (Hay, 1988; Boos, 2008). *Cyrtosperma merkusii* (Fig. 2) is the most widespread species, and is cultivated as a food crop in a manner similar to that of taro (*Colocasia esculenta*) throughout much of its range (Hay, 1988; Boos, 2008). Selected cultivated clones can grow up to 6 m tall and usually lack spines unlike the wild forms that only grown to about 1-m tall (Boos, 2008). The leaves of the wild form, as seen in Singapore, are arrow-shaped and up to 30–60 cm long with prickly nerves and a 0.5–1.5 m long petiole. The leaf lamina and petiole colour varies depending on the amount of exposure. The inflorescence consists of a 10–20 cm long, ovate spathe which is purplish on the outside and cream on the inside (Fig. 3) and a pinkish to brown, 8–10 cm long spadix (Fig. 3) bearing bisexual flowers. The fruits are purplish green with a light brown tip (Fig. 4). This species is classified as nationally vulnerable in the first (Turner et al., 1994) and second editions (Tan et al., in press) of the Singapore Red Data Book because it is only found near pristine freshwater habitats, such as streams in primary or old secondary forest as well as marshes and freshwater swamp forest, which are rare habitats in Singapore.



Fig. 1. *Cyrtosperma merkusii* plant with its heavily armed leaves.



Fig. 2. Plant growing along the shoreline of MacRitchie Reservoir.



Fig. 3. Inflorescence.



Fig. 4. Infructescence.



Fig. 5. Large marshy area adjacent to the MacRitchie Reservoir and Singapore Island Country Club Sime Golf Course.



Fig. 6. *Lasia spinosa* showing a deeply divided leaf lamina.



Fig. 7. *Lasia spinosa* inflorescence.



Fig. 8. *Cyrtosperma merkusii* plant growing in a heavily shaded habitat at the Nee Soon Swamp Forest.

## DISTRIBUTION AND BIOLOGY

This aroid, with potential as an ornamental plant, is confined to the Central Catchment Nature Reserve (CCNR) and the Bukit Timah Nature Reserve (BTNR). In the CCNR it is found along all the Central Catchment reservoirs, such as MacRitchie, Lower Peirce, Upper Peirce and Upper Seletar Reservoirs. It has also been found growing at the large marshy area (Fig. 5) at Sime Road adjacent to the Singapore Island Country Club (SICC) Sime Golf Course, and MacRitchie Reservoir. We have also found this aroid along streams in the Bukit Timah Nature Reserve (Lasia Trail) with *Lasia spinosa*, with which this species has been commonly confused. *Lasia spinosa* differs from *Cyrtosperma merkusii* in that it has leaves which are deeply divided into 4–6 pairs of narrow side-lobes (Figs. 6 & 7) (Keng et al., 1998). *Cyrtosperma merkusii* is commonly displaced by other exotic aroid species along other reservoirs outside the CCNR like Kranji and Lower Seletar Reservoirs. Some of these exotic aroid species include *Alocasia macrorrhizos* and *Colocasia esculenta* which are probably remnants of cultivation in farmland that bordered these reservoirs in the past. In Singapore, *Cyrtosperma merkusii* is most commonly found in the Nee Soon Swamp Forest (Fig. 8) where it occurs in large populations and is present in every stream. This species varies in appearance under different growing conditions. When grown in full sun, this species often grows to very large dimensions, has reddish-brown-tinged petioles 1.2–1.5 m in length and around 2.5–3.0 cm in diameter, sometimes with slight mottling and larger laminae 55–60 cm in length and 35–40 cm wide (Fig. 2). In deep shade, the plants are shorter, have rich deep green petioles which are 30–40 cm in length and usually less than 1 cm in diameter and have very narrow laminae of 30–35 cm in length and 25–28 cm wide (Fig. 6). Plants that grow in deep shade do not flower as often as specimens growing in full sun or bright areas. For the moment, this species' future looks promising as its current habitats are all confined to protected areas in the Nature Reserves of Singapore.

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