

NOTES ON BLADDERWORTS (*UTRICULARIA* SPECIES) IN LAKE JANDABUP (WANNEROO, WESTERN AUSTRALIA) WITH A DESCRIPTION OF *UTRICULARIA DICHOTOMA*

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INTRODUCTION

Lake Jandabup is situated about 4 km north-east of Wanneroo town centre close to the western side of the Gnangara water extraction bore area. For this reason it is likely to be a guide to the effects of water extraction from the Gnangara Mound (Allen, 1981; System 6 Study Report, 1981). The major plant communities of the lake have been reported by How (1978) and consist of approximately concentric bands of rushes and sedges around most of the periphery of the normally wet area. However, as can be seen from Figure 1, there is a break in the belt at the south-east corner where an area of bare sandy soil is exposed and there are only widely spaced clumps of emergent vegetation.

In this small area occur three species of bladderworts (*Utricularia*, Family Lentibulariaceae). These carnivorous plants although uncommon in the lakes of the Perth Metropolitan Area, occur in scattered wetlands of Australia and are well described by Erickson (1968).

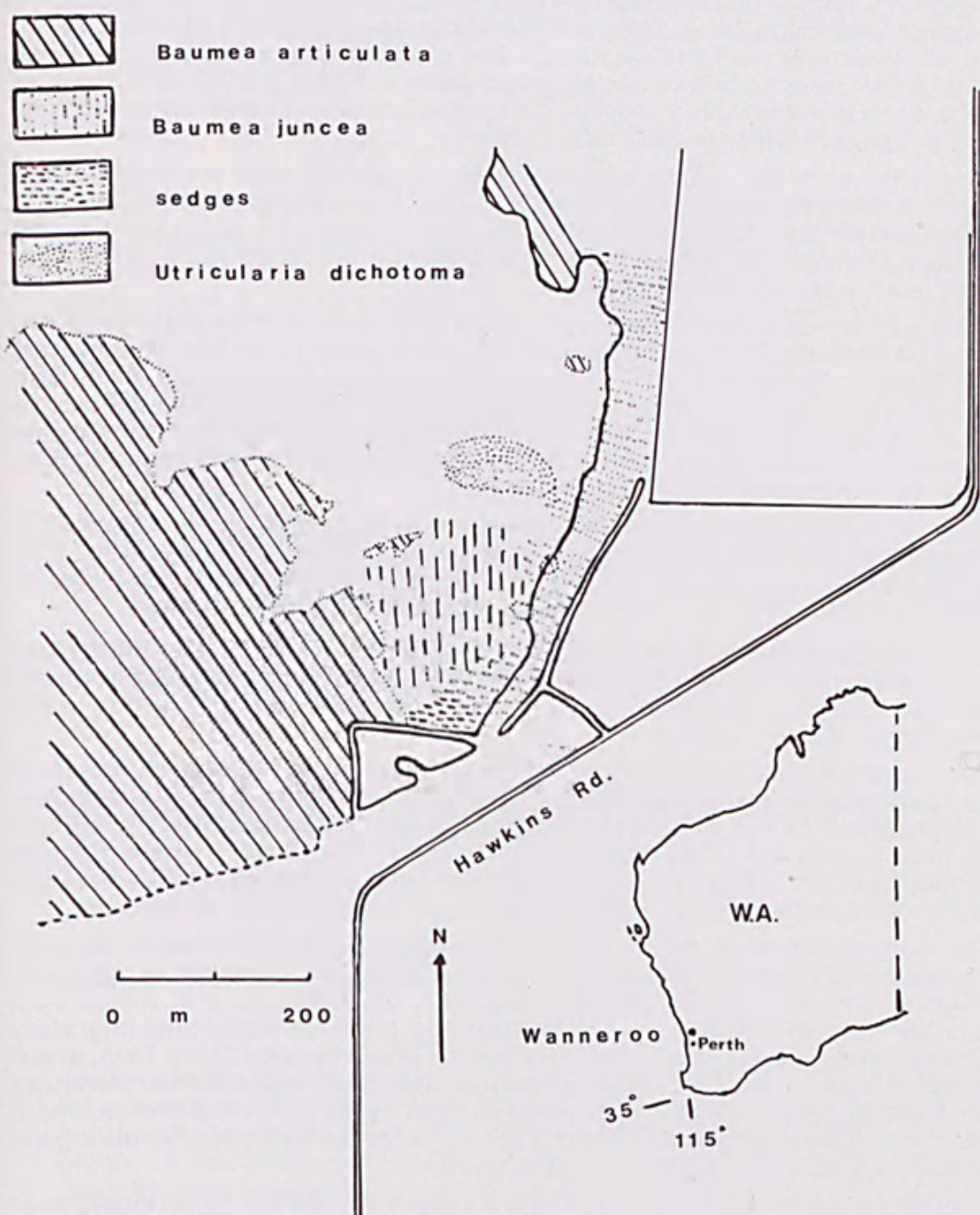


Figure 1. South-east corner of Lake Jandabup, (after 1978 Lands Dept. air photo).

SPECIES OBSERVED

The species observed were *Utricularia volubilis* R. Br., a reasonably common south-west species; the yellow flowered *U. biflora* Lamarck, first observed in Lake Jandabup by Dr. N. Marchant in 1976 and otherwise known from eastern North America (Mr. P. Taylor pers. comm.); and the smaller *U. dichotoma* Labill. Voucher specimens of each have been lodged with the W.A. Herbarium: (*U. volubilis*, IRL32; *U. biflora*, IRL33; *U. dichotoma*, IRL34). The identification of *U. dichotoma* was kindly supplied by Mr. P. Taylor (Royal Botanic Gardens, Kew.).

Because *U. dichotoma* is such a variable plant this species was difficult to identify. A description of *U. dichotoma* is therefore included below. Whereas the specimens described by Erickson (1968) had flowers "opposite in 1 or 2 pairs, or whorls of 3 at the end of the stem, rarely reduced to a single terminal flower," the population observed at Lake Jandabup had a large proportion of solitary flowers. (A count in December 1980 of 4 random 25cm x 25cm quadrats gave 46 solitary flowers and 7 double flowers).

At Lake Jandabup I have seen *U. volubilis* flowering sparsely during November or December in 1976, 1980 and 1981, among *Baumea juncea* and twining up their shoots. Unlike many *Utricularia*, this species does not appear to need a falling water level to flower, (Erickson, 1968).

Utricularia biflora does appear to need a falling water level to flower and I have always found it flowering in very shallow water (less than 2 cm) or in the "mud", usually intertwined with a *Crassula* sp. also growing in the wet peaty soil at that time. A sample of *U. biflora* has grown steadily in a laboratory aquarium since 1979, but has not flowered. However the aquarium only receives southern light and a constant water level is maintained.

Most frequently *U. biflora* was observed flowering near the shore edge amongst fringing rushes (*Baumea juncea*), but flowering specimens were also found nearer the open lake, close to the outer margin of *B. articulata*. On one occasion (9 January, 1980) a flowering specimen was found at the edge of the main lake, north of the sand spit.

In view of the sensitivity of the region under discussion to changes in the water table, it should be recorded that while I have seen *U. biflora* in flower in November-December in 1976, 1977 and 1979, I did not see any flowers in 1980 or 1981, and only one small piece of vegetative material of the species in October 1981 in the shallow open water, whereas in the years when the species flowered, pieces of the plant were plentiful in the south-east portion of the lake, caught against the stems or rushes.

Utricularia dichotoma has previously been recorded in W.A. only from east of Esperance (Marchant and Keighery, 1979) and the Stirling Range region (Mr. P. Taylor, pers. comm.). I have seen this species flowering from November to March in 1980, 1981 and 1982, always on the open stretch of sand.

The flowers follow the falling water level, with a belt of the small purple flowers in an area 1-2m uphill from the water level, while further uphill the plants develop small (ca 1mm diameter) round seed capsules and still further uphill the shoots die and break off.

The close proximity of all three species suggests that the combination of position, shape, sparse vegetation of the area, the common south-west and east winds of the region, and the gentle slope of the lake bed, are all important in providing a relatively large area of winter inundation where floating branches of *U. biflora* and *U. volubilis* can become trapped, while the long slope of open sandy peat is important as the habitat for *U. dichotoma*.

The occurrence of *U. biflora* and *U. dichotoma* so far from their previously known ranges is of some interest. *U. biflora* may be an aquarium escape, or it might have been introduced by a migratory bird. The Lake is visited by a number of birds (Storr, et al. 1978) including the trans-equatorial migratory Greenshank, Sharp-tailed Sandpiper and the White-winged Black Tern, which breed in the northern hemisphere. However, there are no published references for birds migrating to Western Australia from eastern North America, and it seems highly unlikely that seeds or vegetative matter would survive during the time taken for a trans-equatorial migration.

Utricularia dichotoma could, in principle, have been spread by water birds, as their summer migration to the remaining coastal wetlands is well known (Riggert, 1976). For example, the Grey Teal is particularly nomadic (Slater,

1970) and was reported in varying numbers at Lake Jandabup by Storr et al. (1978). On the other hand this *Utricularia* species may have been at Lake Jandabup a long time (but unreported) as it is only noticeable when it flowers, and it has a small flower, difficult to notice even when one knows it is present. At the time of Marchant's survey of the lake (4 December, 1976) the sand spit where it flowers was under 30-40cm of water, and there would have been no sign of the species.

Description of *Utricularia dichotoma* from Lake Jandabup

Plant growing submerged in water, or on damp sand, anchored in the sand. Leaves basal, linear and pointed, up to 12mm long, expanded to a 1mm wide blade, accompanied by threadlike stems, some of them bearing bladders. Bladders large (1-1.5mm diameter). Bracts, 3 in whorl, shortly spurred. Scapes 1-1.5mm diameter, 80-140mm tall, bearing one or two terminal flowers. Flowers purple on short pedicels (3-5mm). Calyx lobes ovate. Upper corolla lobe small (1-2mm), purple, contracted at base, and a shortly 2 lobed. Lower lip broad (5-10mm across) and entire. Palate yellow, prominent. Spur shorter than lower lip. Habitat: open sand bank and shallow water (10-15mm depth) on SE edge of Lake Jandabup. Flowers after water level recedes, December to March.

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BALLISTOCHORY (EXPLOSIVE SEED DISPERSAL) IN *BAXTERIA* R. BR. (XANTHORRHOACEAE)

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ABSTRACT

Baxteria australia is unique amongst the Western Australian Xanthorrhoeaceae in having active ballistochory as a seed dispersal mechanism.

INTRODUCTION

Baxteria R. Br. is a monotypic genus endemic to southern Western Australia. It's taxonomic placement is obscure, and although currently placed in the Xanthorrhoeaceae, it does not appear closely related to any other genus placed in this family, nor to any genus in the Liliaceae. The sole species has recently been considered as forming a separate family (Chanda and Ghosh, 1976), however for purposes of this paper it is retained in the Xanthorrhoeaceae.



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