No. 108 JANUARY 1992

THE
TASMANIAN NATURALIST

ISSN 0819-6826
POSTAL ADDRESS: G.P.O. BOX 68A, HOBART 7001
EDITOR: D.G. HIRD

A NEW RECORD FOR *BANKSIA SERRATA* IN TASMANIA

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Banksia serrata (saw banksia) was probably first recorded in Tasmania by James Backhouse in the early 1830's at Sisters Beach on the North West Coast. Until recently this was the only known population in the state. However, information from Mr Alf Stackhouse of Killiecrankie, Flinders Island has lead to the location of a stand of the species in the Wingaroo area on northern Flinders Island. He and his family had known of this occurrence for the past 40 years but had not publicised the fact. Here *B. serrata* forms an open woodland of about 1 ha on an undisturbed hillslope in the southern part of the new Wingaroo Nature Reserve. Given the known age of the stand (greater than 40 years), its location, and the size of the largest individuals (up to 8m tall), it is very unlikely that this population has developed from an introduction by European settlers.

B. serrata is widespread along the east coast of Australia from Fraser Island to Wilsons Promontory (Fig. 1) where it occurs in coastal and near coastal woodlands, forests and heathlands (Taylor and Hopper 1988). The species extends into the Blue Mountains on the mid-coast of New South Wales.

B. serrata belongs to an interesting group of plants which are widespread on the mainland but have very limited occurrences in this state, usually on islands in Bass Strait or at restricted localities along the north and east coasts of Tasmania. These species conform to three generalized distribution patterns. Some have strong affinities with temperate and warm temperate communities on the coastal plain of eastern and southeastern Australia. Examples include *B. serrata, B. integrifolia. Melaleuca armillaris, Leucopogon esquamatus, Helichrsysum argophyllum, Sicyos australis,* and *Eleocarpos reticulatus.* A second subgroup is comprised of species which have affinities with semiarid mallee and arid desert

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communities of western Victoria, South Australia, and Western Australia, for example *Eutaxia microphylla*, *Pimelea serpyllifolia*, *Geococcus pusillus*, *Lavatera plebia*, *Lasiopetalum discolor*, and *Myoporum parvifolium*. The remainder of the species are more widespread in southern and south eastern Australia, for example *Hakea sericia*, *H. ulicina*, and *Helichrysum baxteri*.

Why do these taxa have such limited distributions in Tasmania? Either, they are restricted by unfavourable climatic conditions or other factors, perhaps having been more widespread in the past, or else they are relatively recent arrivals at their present locations by long distance seed dispersal from the mainland but as yet have not colonised their potential ranges. The second explanation cannot be discounted for any of these taxa unless evidence is found which can establish their antiquity in our region. However, considerable congruence in the distribution patterns of the species suggests that they have experienced similar histories rather than being the survivors of unique dispersals across Bass Strait brought about by a fortuitous interplay of events.

It is possible that at least some of these species where widespread on the Bassian land bridge which connected Tasmania to the Mainland during the last glacial period when sea levels were up to 150 metres below present. Since then climate change and rising sea levels may have forced these taxa into refugial situations at sites where environmental factors remain marginally suitable for their continued existence.

The floras of Curtis and Rodondo island in Bass Strait contain elements which suggest that they are remnants from the Bassian Plain (Kirkpatrick et. al. 1974). One of these species, Melaleuca armillaris, is recorded from both these islands and also from Long Island near Cape Barren Island (Steve Harris pers. com.). *M. armillaris* is found in coastal communities throughout eastern Australia. There is a disjunction of over 300km between the Bass Strait populations and the nearest population in East Gippsland. The absence of *M. armillaris* from most islands in eastern Bass Strait suggests that the species is poorly dispersed across sea barriers. Disjunctions in the distribution of *B. serrata* (Fig. 1) are comparable to those of *M. armillaris*. Despite many apparently suitable habitats in northern Tasmania, and the islands, the species is virtually absent from the region. Coast banksia, *Banksia integrifolia*, has a similarly puzzling distribution. It occurs from south of Cooktown to near Geelong on the Australian coast and in two tiny populations in Bass Strait, King Island (now extinct) and Long Island in the Hogan Group (3 Individuals). Kirkpatrick et. al. (1974) raise the possibility that, during the last glacial, lower sea levels exposing a coastal plain may have allowed presently disjunct populations of *M. armillaris* to have been continuous with mainland populations but question whether climatic conditions at the time could allow such a distribution to occur. Pollen evidence from cave sediments on

Hunter Island (Hope 1978) indicates that the vegetation of the Bassian Plain, at the time of maximum glaciation, was a very open grassland community with composite shrubs or annuals and scattered eucalypts. The climate in the region would have been colder, drier, and windier than at present. Hope suggests that the Bassian vegetation would have had affinities with present day semi-arid, warm-temperate woodlands, and with inverted treeline and alpine timberline communities of the driest part of Tasmania's Central Plateau. Disjunct mallee and desert species found on the Bass Strait Islands provide supportive evidence for this view.

How then could species which are characterised by eastern temperate and warm temperate coastal climates survive the rigors of the Bassian Plain? Two answers to this question can be suggested. One, that the eastern margin of the Bassian Plain remained warm and moist enough to support coastal communities containing these species. This may have been facilitated by the moderating influence of warm east Australian ocean currents on the east coast of the Bassian Plain in the same manner that the Gulf Stream moderates the climate in north western Europe. Two, that following the intensely cold and dry glacial maximum increasing temperatures and precipitation in the late Pleistocene-early Holocene may have allowed these taxa to expand onto the Bassian Plain from refugia in far eastern Victoria before rising seas severed Tasmania and the island from the Mainland. The early Holocene climate for the region is considered to have been warmer and wetter than at present (Macphail 1980). Either way it appears that sea level rises and deterioration of climate in the middle Holocene have combined to dramatically limit the distribution of temperate/warm-temperate species like *B. serrata* in our region.

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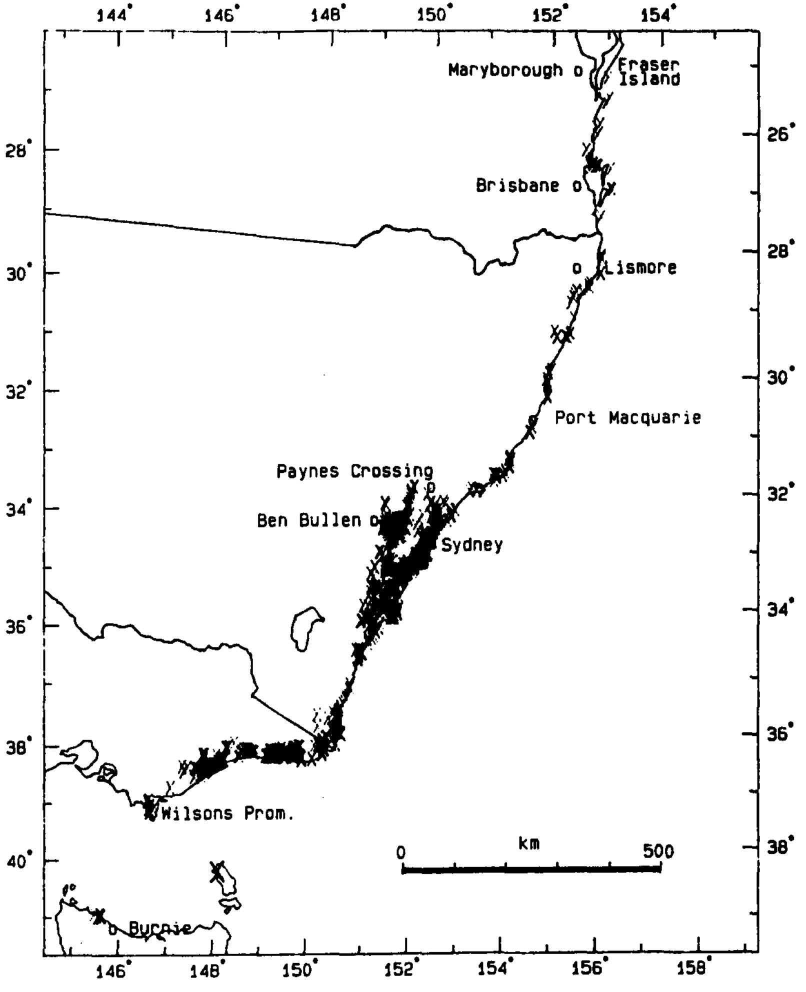

Figure 1 The distribution of *Banksia serrata* (updated from Taylor and Hooper (1988))

SOME CURSORIAL SPIDERS PRESENT IN TWO FOREST TYPES IN TASMANIA

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INTRODUCTION

Pitfall traps were established to monitor ground beetle populations at a callidendrous rainforest site and a dry eucalypt site, both in southern Tasmania. Several spiders were incidentally collected in the traps and these records are presented here.

SITES

Rainforest *A Nothofagus cunninghamii* (myrtle)/*Atherosperma moschatum* (sassafras) dominated forest situated 23kms west of Maydena on the Gordon River Road. Elevation 480m with an annual rainfall of 1944mm.

Dry eucalypt forest Dominated by *Eucalyptus obliqua*/*E. amygdalina* over a dense low understorey of grasses, prickly shrubs and young *Acacia dealbata* regeneration. Situated 12kms north of Buckland. Elevation 240m with an annual rainfall of 710mm.

Pitfall trap establishment Each site carried 20 pitfall traps set up in two rows of 10 traps. Each trap consists of a 500ml waxed cup with a wide lip buried in the soil and sheltered with a black plastic flower pot base supported by three wooden pegs. A solution of 35% Ethanol/50% Glycerol was used as a preservative and to prevent evaporation loss. The traps were emptied every fourteen days for twelve months. The pattern of trap establishment followed that of Greenslade (1973).

RESULTS

Rainforest site A total of 22 species from 10 families were captured. In all 123 individuals were trapped. The most common species was *'Rubrius' milivina* (Agelenidae) contributing 27% of the total individuals captured. The families Desidae and Amaurobiidae were the most diverse in species. The numbers of individuals of each species are listed in Table 1

Dry eucalypt site A total of 40 species from 18 families were captured. In all 351 individuals were trapped. The Agelenidae was the dominant family in numbers of individuals whilst the Zodariidae was the most species diverse. Table 2.

COMMENTS

14% of speeies were common to both forest types. It is of interest that casual

Family and species	Number of individuals	
	Males	Females
Agelenidae (Platform Spiders)		
'Rubrius' milivina	23	10
Sp. A	2	0
Sp. B	0	10
Amaurobiidae (Lace-Web Spiders)		
Badumna insignis	1	3
Stiphidium facetum	1	0
Storenosma sp.	8	3
Sp. A	0	5
Sp. B	1	0
Clubionidae (Sac Spiders)		
Clubiona sp.	0	1
Ctenizidae (Trapdoor Spiders)		
Arbanitis annulipes	4	4
Cyclotenidae		
Cycloctenus infrequens	0	1
Cycloctenus sp.	1	1
Desidae		
Ommatauxesia macrops	6	6
Tuakana sp.	8	3
Gasparia sp. I	1	0
Gasparia sp. 2	6	2
Sp. A.	1	0
Ginyphiidae		
Erigone sp.	1	0
Linyphiidae (Money Spiders)		
Sp. A	1	6
Nicodamidae		
Nicodamus bicolor	1	0
Nicodamus sp. prob. *bicolor*	1	0
Thomisidae (Crab Spiders)		
Sidymella lonqipes	1	0

Table 1 Cursorial spiders collected in callidendrous rainforest

Family and species	Number of individuals	
	Males	Females
Agelenidae (Platform Spiders)		
'Rubrius' milivina	0	1
Sp. A	48	12
Sp. B	2	4
Amaurobiidae (Lace-Web Spiders)		
Stiphidium facetum	2	0
Sp. A	4	1
Sp. B	3	0
Araneidae (Orb Weavers)		
Arcys clavatus	0	1
Clubionidae (Sac Spiders)		
Clubiona elephines	1	0
Supunna sp.	12	2
Sp. A	1	0
Ctenizidae (Trapdoor Spiders)		
Sp. A	24	1
Sp. B	1	0
Dipluridae		
Aname trevallynia	1	0
Gnaphosidae		
Sp. A	0	4
Sp. B	9	0
Linyphidae (Money Spiders)		
Sp. A	12	1
Sp. B	1	0
Sp. C	1	0
Lycosidae (Wolf Spiders)		
Lycosa sp. A	44	10
Lycosa sp. B	1	0
Miturgidae		
Miturga agelenina	0	1
Miturga velox	0	2
Nicodamidae		
Nicodamus bicolor	4	0
Nicodamus ? prob. *bicolor*	33	1
Sp. A	0	1

Saltícidae (Jumping Spiders)		
Sp. A	5	3
Sparassidae (Huntsman Spiders)		
Olios sp.	1	0
Theridiidae (Comb-footed Spiders)		
Sp. A	1	0
Thomisidae (Crab Spiders)		
Stephanopis cambridgei	0	1
Toxopidae		
Sp. A, Sp. B, Sp. C combined	30	11
Zodariidae		
Storena flavipedes	25	7
Castianiera sp. A	2	0
Castianiera sp. B	0	1
Castianiera sp. C	2	0
Castianiera sp. D	0	1
Zoridae		
Sp. A	6	3
Sp. B	1	2

Table 2 Cursorial spiders collected in dry eucalypt forest

collecting has obtained specimens of the rare and endemic family Toxopidae, the uncommon genus *Erigone*, and a total of six Tasmanian endemic species.

ACNOWLEDGEMENTS

The majority of species were identified by Ms Elizabeth Turner (Tasmanian Museum). The Agelenidae were examined by Dr Robert Raven (Queensland Museum) and the Amaurobiidae by Dr Mike Gray (Australian Museum).

Common names of spider families are from Davies(1986) and Main(1976).

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