THE APPLICATION OF THE NAME TEMPLETONIA SULCATA
(Meissn.) Benth. AND A NEW SPECIES OF TEMPLETONIA R.Br.
(PAPILIONACEAE) FROM WESTERN AUSTRALIA

by

J. H. Ross*

ABSTRACT
The correct application of the name Templetonia sulcata (Meissn.) Benth. is established
and T. smithiana sp. nov. is described from Western Australia.

INTRODUCTION
The existence of two closely related taxa among the plants traditionally referred to T.
sulcata in Western Australia and the resulting uncertainty concerning the correct
application of the name T. sulcata were discussed previously (Ross, 1982). Subsequent
field studies have clarified this situation.

THE APPLICATION OF THE NAME T. SULCATA
The two taxa in Western Australia traditionally referred to T. sulcata differ in pod
size and in seed size, shape and colour; the taxon with large pods having pods 2-2.8 cm
long and 0.95-1.5 cm wide and the taxon with small pods having pods 0.75-1.8 cm long
and 0.4-0.8 cm wide. When the earlier work was undertaken (Ross, l.c.) the two taxa
could not be distinguished with confidence in the absence of mature pods, despite
the presence of other differential tendencies, and the uncertainty over the correct
application of the name T. sulcata arose because Preiss 1028, the type of T. sulcata, is a flowering
specimen with immature pods. The small-podded and large-podded taxa occur
sympatrically in some areas and the type locality of T. sulcata near York is within the area
where both taxa might be expected to occur.

In response to a request for assistance, Basil and Mary Smith of Wongan Hills spent
a considerable amount of time and effort in the field collecting, recording and observing
populations of T. sulcata. Plants were tagged, sprayed with insecticide to ensure that
developing pods reached maturity, and revisited. It was thought unlikely that T. sulcata
had survived in the vicinity of York as the Avon River valley has been farmed intensively
for over a century but aerial reconnaissance by Basil Smith identified several possible
habitats. Subsequent visits to these areas by road revealed good populations at Mt. Hardy
east of York and between the Avon and Dale rivers near Dale Bridge south of York. This
paper is based on the Smith's efforts supplemented by my own field studies and the
examination of herbarium collections.

Observations in the Lake Moore, Manmanning, Cowcowing, Southern Cross and
York areas confirmed that the two taxa can be differentiated readily by pod size and by
seed size and shape. Plants either have large pods containing large seeds (10-16 mm long,
6-9 mm wide) or small pods containing small seeds (4.5-5.5 mm long, 2.2-3 mm wide).
Furthermore, large pods occur on large plants (mostly 1.7-3.2 m high) and small pods on
small plants which seldom exceed 1.8 m in height. There is no discontinuity in the size of
the large-podded and small-podded plants and, of course, when young, the large-podded
plants are small. Although large- and small-podded plants occur sympatrically, they tend
to have slightly different ecological preferences and in no instance were mixed
populations of large- and small-podded plants observed. The large-podded plants favour
sandy loam rises near salt lakes and the small-podded plants favour clay or sandy soils and

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usually occur with *Eucalyptus salmonophloia*. The small-podded plants are usually more intricately branched and denser than the large-podded plants. In the field the habit and stature of the plants enable the two taxa to be recognized with little difficulty and provide a fairly reliable means of predicting pod size.

As a result of field observations and the re-examination of type material and other herbarium collections, I am satisfied that the name *T. sulcata* applies to the taxon with small pods which is widespread in southern Western Australia, and occurs also in South Australia, Victoria and New South Wales. The representative specimens of the taxon with small pods cited in Ross, l.c.:28 are referable to *T. sulcata*. *Bossiaeae rossii* F. Muell., Fragn. Phyt. Austr. 3:94 (1862), discussed and lectotypified in Ross, l.c. 27–28, is a synonym of *T. sulcata*.

In an endeavour to obtain supplementary evidence in support of the decision concerning the application of the name *T. sulcata* I took up an offer by Dr. F. G. Lennox, C/- School of Botany, University of Melbourne, to study the polyphenols in stem extracts by means of thin-layer chromatography. A stem sample 1.5 cm long was taken from nine different specimens, the specimens representing contemporary material of the small-podded and the large-podded taxa and the two type sheets of *T. sulcata* in MEL. The nine samples were submitted to Dr. Lennox who employed the method to extract the polyphenols from the stem samples outlined in Calder et al. (1982). The polyphenol samples were developed in one dimension with 15% acetic acid using "Merck TLC aluminium sheet cellulose F254" as the support medium.

The fluorescent patterns obtained from the polyphenols divided the nine samples into two groups, one group corresponding to the samples from the specimens with small pods and the other to the samples from the specimens with large pods. The patterns exhibited by the two samples from the type material of *T. sulcata* matched the patterns shown by the samples of the small-podded taxon.

*T. sulcata* and the taxon with large pods are unquestionably closely allied and their differentiation in the absence of mature pods is difficult on occasions. However, the latter merits formal taxonomic recognition and, because the seeds are significantly different, specific rank seems appropriate. It affords me much pleasure to name this species *T. smithiana* in honour of Basil and Mary Smith.

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**T. SMITHIANA**

*Templetonia smithiana* J. H. Ross, sp. nov.; *T. sulcatae* (Meissn.) Benth. affinis, a qua leguminibus majoribus et seminibus majoribus ellipticos bruneis et ochro-bruneis differre.

Frutex usque ad 3.2 m altus, aphyllus, glaber; rami complanati, 3.5-9 mm lati, longitudinaliter striati, apicibus acutiusculis vel saepe spinescentes. Stipulae inconspicueae. Flores axillares, solitarii vel gemini; pedicelli usque ad 2 mm longi; bracteolae 1.5-2 mm longae, 1.6-2 mm latae, persistentes. Calyx usque ad 4.3 mm longus. Vexillum oblatum, 5.5-7.5 mm longum, 5.5-7 mm latum, flavescens et atro-purpurascens; alae usque ad 6.5 mm longae et 2.6 mm latae, unguiculatae; carina usque ad 6 mm longa, unguiculata. Stamina 10; filamenta in columnam antice fissam connata. Ovarium glabrum. Legumina oblique obovata vel elliptica, 2.2-2.8 cm longa, 0.95-1.5 cm lata, coriacea, extus nigro-fusca, compressa sed non complanata. Semina elliptica, complanata, 10-16 mm longa, 6-9 mm lata, brunea vel ochro-brunea.

Glabrous leafless *shrub* to 3.2 m high with divateciculate flattened branches, the *branches* 3.5-9 mm wide, faintly or distinctly longitudinally striate, the margins notched at the nodes, often terminating in a short spine. *Stipules* inconspicuous. *Leaves* reduced to minute scales up to 1 mm long. *Flowers* 1 or 2 per axil, on glabrous pedicels up to 2 mm long, the pedicels with a pair of ovate papery brown bracteoles 1.5-2 x 1.6-2 mm which overlap the base of the calyx, the bracteoles convex outside, concave within, glabrous or with marginal cilia. *Calyx* up to 4.3 mm long, the lowest lobe often slightly longer than the others, the lobes mostly shorter than the tube, glabrous outside except for hairs on the apices of the lobes. *Standard* oblate, 5.5-7.5 mm long including a claw up to 1.5 mm long, 5.5-7 mm wide, emarginate apically, yellow and purplish-brown; *wings* up to 6.5 mm long including a claw up to 2 mm long, up to 2.6 mm wide, auricled; *keel* petals
up to 6 mm long including a claw up to 2 mm long, up to 2.5 mm wide, auricled. **Stamens** up to 6.5 mm long. **Ovary** shortly stipitate, mostly 4-6-ovulate, glabrous. **Pods** obliquely obovate or elliptic, narrowed to an acute lateral apical beak, 2-2.8 cm long, 0.95-1.5 cm wide, 0.4-0.8 cm thick, shortly stipitate, 1(2)-seeded, valves coriaceous, convex, dark brown, glabrous. **Seeds** elliptic, flattened, 10-16 mm long, 6-9 mm wide, 3-4.5 mm thick, pale brown or yellowish-brown, the hilum surrounded by a collar-like aril.

**Type Collection**: Western Australia, Doodandoo, No. 2 Rabbit fence, 0.25 mile N. of gate 44, 31° 01' S., 117° 12' E., 13.xii.1982, B. H. Smith 204 (MEL 626707 holo., isotypes to be distributed to K, PERTH).

**Representative Specimens Examined**:


*T. smithiana* is endemic in Western Australia and occurs mainly from south-east of Geraldton to approximately the Great Southern Highway from Perth to York and eastwards to Coolgardie (Fig. 1). It favours sandy loam rises near salt lakes.

The pods and seeds differentiate *T. sulcata* and *T. smithiana* readily (see Ross, l.c.:26, fig. 15). The diagnostic differences are given in Table 1.

It is unfortunate that no reliable floral character has been found to differentiate flowering material of *T. sulcata* and *T. smithiana* but differences in habit and stature and, to some extent ecological preferences, will assist to distinguish the two species. There is a suggestion that flower colour of the two species differs slightly, the flowers of *T. sulcata* being more conspicuously yellow than those of *T. smithiana* which tend to be duller and less obvious. In *T. sulcata* the calyx lobes tend to be acute apically and the ovaries usually contain 2-4 ovules whereas in *T. smithiana* the calyx lobes tend to be obtuse apically and the ovaries 4-6 ovulate.

The occurrence of two closely related leafless species with flattened stems is reminiscent of the relationship that exists between *T. egena* (F. Muell.) Benth. and *T. battii* F. Muell., two leafless species with terete stems.

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**Fig. 1.** The known distributions of *Templetonia sulcata* and *T. smithiana* in Western Australia.

○ — *T. sulcata*;
● — *T. smithiana*;
△ — sterile or flowering specimens which cannot be referred to either *T. sulcata* or *T. smithiana* with certainty.
Table 1. Comparison of the diagnostic differences between *T. sulcata* and *T. smithiana*.

<table>
<thead>
<tr>
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<th><em>T. sulcata</em></th>
<th><em>T. smithiana</em></th>
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<tbody>
<tr>
<td>pod length</td>
<td>7.5-18 mm</td>
<td>20-28 mm</td>
</tr>
<tr>
<td>pod width</td>
<td>4-8 mm</td>
<td>9.5-15 mm</td>
</tr>
<tr>
<td>seed length</td>
<td>4-5.5 mm</td>
<td>10-16 mm</td>
</tr>
<tr>
<td>seed width</td>
<td>2.2-3 mm</td>
<td>6-9 mm</td>
</tr>
<tr>
<td>seed shape</td>
<td>oblong</td>
<td>elliptic</td>
</tr>
<tr>
<td>seed colour</td>
<td>deep olive brown</td>
<td>brown or yellowish-brown</td>
</tr>
<tr>
<td>aril</td>
<td>conspicuous, margin incised and frilly</td>
<td>less conspicuous than in <em>T. sulcata</em> and margin not frilly</td>
</tr>
</tbody>
</table>

ACKNOWLEDGEMENTS

It is a pleasure to acknowledge the contribution of Mr and Mrs B. H. Smith, Wongan Hills, who travelled extensively and carried out field studies over several years on my behalf and provided specimens, observations and colour transparencies. I am most grateful to Mr and Mrs Smith for their hospitality and help in the field during a visit to Western Australia in 1982, to Dr. F. G. Lennox, C/- School of Botany, University of Melbourne, for kindly carrying out thin-layer chromatography of the polyphenols, and to my colleague, Dr P. S. Short, for companionship and help in the field.

REFERENCES


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