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A NATURALLY OCCURRING PUTATIVE INTERSPECIFIC HYBRID IN *EREMOPHILA* (MYOPORACEAE)

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Abstract

A naturally occurring putative hybrid between *Eremophila oppositifolia* R.Br. and *E. scoparia* (R.Br.) F.Muell. was found at Whyalla, South Australia.

The hybrid is morphologically intermediate in most characters between the two species and has a much increased pollen sterility. Illustrations, and a tabulated comparison, of the more important vegetative, floral and fruit features are provided for the hybrid and its parents.

Introduction

In June 1976, when assisting in the erection of a fence to enclose the newly established fauna park just west of Whyalla, one of the authors (P. H.) noted an *Eremophila* close to the western fenceline. The solitary plant was growing in association with *Eremophila scoparia* (R.Br.) F.Muell. and *E. oppositifolia* R.Br. var. *oppositifolia* in an open *Acacia sowdenii* woodland on red sandy clay loam. Other common shrubs included *Atriplex vesicaria* Hew. ex Benth. and *Maireana sedifolia* (F.Muell.) P. G. Wilson.

The plant could not be referred to either of the above species of *Eremophila* or to any of the others known to occur in the park, namely *E. alternifolia* R.Br., *E. glabra* (R.Br.) Ostenf. and *E. longifolia* (R.Br.) F.Muell. In fact it appeared to be an intermediate between *E. oppositifolia* and *E. scoparia*.

A more detailed analysis of the intermediate plant and of the probable parents was carried out at the State Herbarium. Quantitative and qualitative measurements, provided in Table 1, are based entirely upon the Whyalla populations and therefore do not necessarily represent the full ranges of variability of the two species. Pollen grains were stained in iron-acetocarmine.

Details of Collections

SOUTH AUSTRALIA, EYRE PENINSULA: Whyalla, western boundary of Fauna Park near Airport 33° 03'S, 137° 31'E

E. oppositifolia: R. J. Chinnock 2994, 21.viii.1976 (AD, PERTH); P. Hudson s.n., 6.i.1977 (AD 97702121).

E. oppositifolia x *scoparia*: R. J. Chinnock 2993, 21.viii.1976 (AD, K, NSW, PERTH); P. Hudson s.n., 6.i.1977 (AD 97702122).

E. scoparia: R. J. Chinnock 2995, 21.viii.1976 (AD, PERTH).

Discussion

The intermediate plant is considered an F_1 hybrid between *Eremophila oppositifolia* and *E. scoparia*.

The indumentum of the stem and leaves of the hybrid is interesting because of the two very different types found in the parents. The hairs of *E. oppositifolia* are flattened,

Table 1 Comparison of vegetative, floral and fruit features of *Eremophila oppositifolia*, *Eremophila scoparia* and their putative hybrid based upon the Whyalla populations.

	<i>E. oppositifolia</i>	putative hybrid	<i>E. scoparia</i>
STEM:			
indumentum	grey tomentose	grey scurfy tomentose	silvery-grey lepidote
shape in cross-section	terete	terete	tetragonous
surface features	smooth	tuberculate	tuberculate
internodes (cm)	(0.4) 0.7-0.9	(1.45) 1.5-2.0 (2.2)	(1.0) 1.3-1.7 (2.2)
LEAF:			
length (cm)	(4.3) 5.6-6.8 (7.4)	(2.8) 3.3-4.9 (5.4)	(1.5) 1.6-1.9 (2.1)
width (mm)	1.5-2.2	1.5-2.0	1.2-1.8
indumentum	grey tomentose	grey tomentose	silvery-grey lepidote
hairs/scales	appressed tongue-like segmented hairs	irregularly shaped scurfy hairs to scales	peltate irregularly margined scales
PEDICEL:			
shape	subterete, slightly compressed	subterete, slightly compressed	laterally compressed \pm ribbed
CALYX:			
segment length (mm)	12.5-13.2	3.1-4.3	2-2.5
segment shape	obovate	narrow oblong	triangular
segment apex	broadly obtuse	acute	acute
segment post anthesis	enlarged and reticulated	not enlarged, herbaceous	not enlarged, herbaceous
COROLLA:			
length (cm)	2.6-2.8	1.8-2.3	1.2-1.5
colour	cream tinged reddish above	mauve	blue
indumentum on outside	absent	substellate-stellate hairs	peltate scales
hairs on lobe margins	simple	simple and stellate	stellate
hairs in tube	simple	simple and arachnoid	arachnoid
STAMENS:			
lateral filament curvature	absent	weakly developed	pronounced
anther backs	glabrous	glabrous or with an occasional arachnoid hair	arachnoid hairy
pollen sterility % (minimum sample 200)	6.0	49.36	2.6
OVARY:			
length (mm)	4.2	3.0	2.5
shape	ovoid-oblong	narrow ovoid	ovoid-conical
apex	obtuse	obtuse	acute
indumentum	finely pubescent	finely pubescent	lepidote
STYLE:			
indumentum	sparsely hirsute throughout	scattered simple and branched hairs in lower half	lepidote, substellate and simple hairs in lower part especially towards the base
DRUPE:			
length (mm)	5.5-6.6	4.1-5.7	3.2-4.6
width (mm)	2.2-3.0	2.1-2.9	2.3-3.2
shape	oblong slightly compressed	ovoid-oblong \pm terete	ovoid-conical \pm tetragonous due to 4 ribs
indumentum	densely pubescent	densely pubescent	lepidote

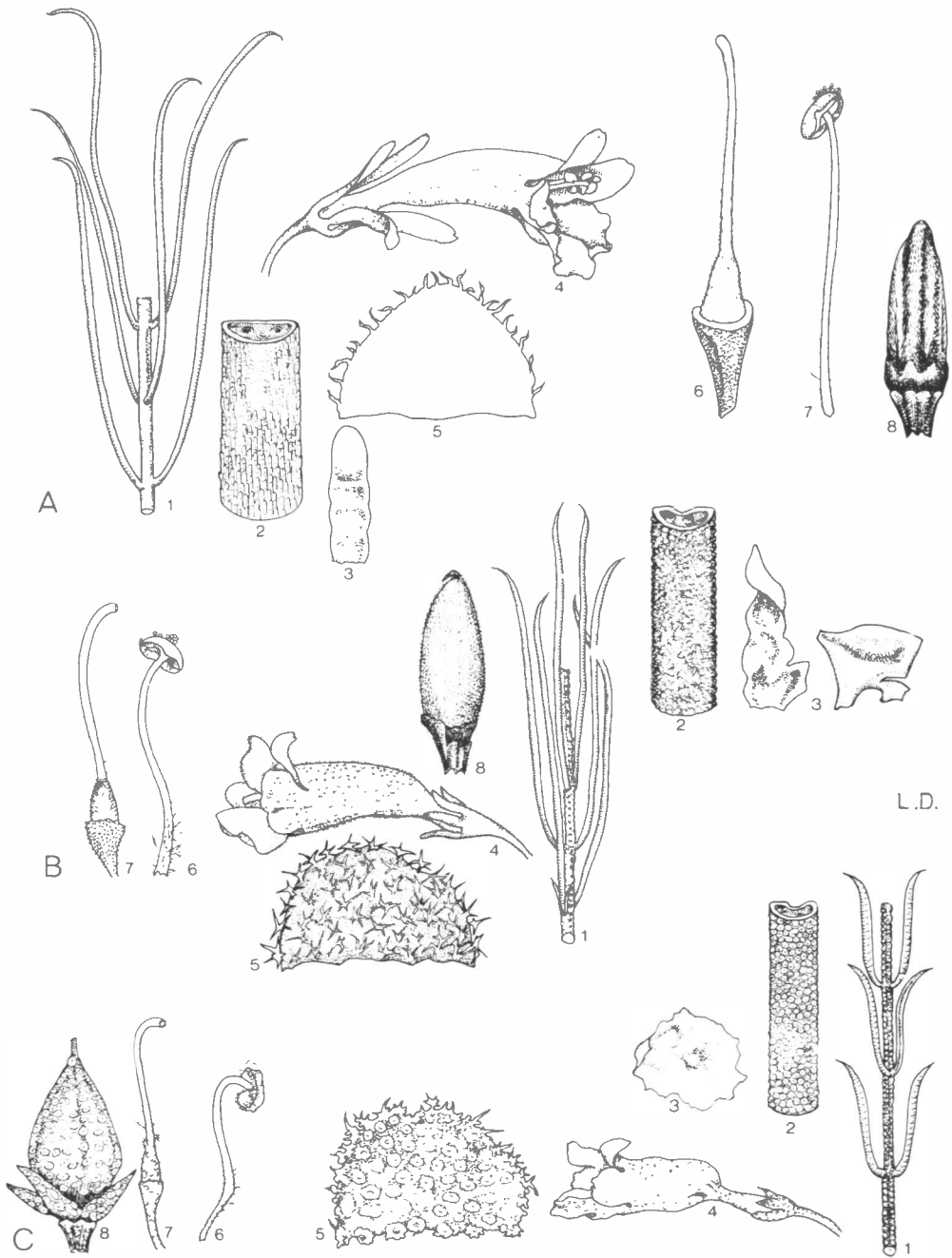


Fig. 1. A. *E. oppositifolia*; B. *E. oppositifolia x scoparia*; C. *E. scoparia*; 1. Portion of stem with leaves (x0.75). 2. Enlarged portion of stem (x 4). 3. Indumentum type on stem and leaves (x 120). 4. Side view of flower (x 2). 5. Corolla lobe to show indumentum type (x 7). 6. Upper stamen (x 4). 7. Gynoecium (x 2). 8. Drupe (x 3.5). Del. L. Dutkiewicz.

tongue-like and segmented (Fig. 1A₃) where those of *E. scoparia* are peltate scales with irregular margins (Fig. 1C₃). In both cases they are appressed and completely cover the surface. In the hybrid the indumentum ranges from tongue-like hairs to almost peltate scales (see Fig. 1B₃ and compare with 1A₃, 1C₃) with various intermediate forms. Unlike the parents the indumentum is not evenly appressed and this gives rise to a scurfy appearance. In addition it is more readily lost and the leaves become partially glabrous with age.

Floral features are intermediate with the exception of the indumentum on the outer surface of the corolla which is substellate to stellate pubescent unlike both parents. The margins of the lobes in *E. scoparia* are, however, substellate or stellate pubescent (Fig. 1C₅) which has probably contributed to the inheritance of this type of indumentum in the hybrid.

Fruits do develop in the hybrid but all but two of the 10 seen were barren. The seed is similar in shape and size to that found in both parents.

The two putative parents belong to different sections of *Eremophila*; *E. oppositifolia* to sect. *Eremophila* and *E. scoparia* to section *Pholidia* (R.Br.) F.Muell. In both cases they are the type species of their sections. Although *Pholidia* has been considered by most authors to be only a section of *Eremophila* it was originally described as a distinct genus by Robert Brown.

The two sections differ in a number of floral and vegetative features and the occurrence of a hybrid is, therefore of particular interest and may prove important for future consideration of the status of *Pholidia*.