

# The flowers of *Pelargonium inodorum* (Geraniaceae)

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## Introduction

I have already written about the fruit and seed of this rather uncommon native herb (Gardner 2015, and see Note 1 below for representative habitats). At the time I did not give much attention to its little magenta-coloured flowers—it seemed clear, from the profusion of seed made by isolated plants, that self-pollination was the rule. But to fill in the picture, here is something on the floral structure of this species and that of the genus as a whole.

## Morphology

Most of the 280 or so species of *Pelargonium* are naturally restricted to Africa, the south-western part of the continent in particular. A good many though are commonly cultivated (along with a plethora of hybrids), having prettily coloured flowers and foliage scented of lemon, rose, mint, etc. The several Australasian species, of which *P. inodorum* is typical, have small flowers and foliage that may not be scented at all. In contradiction to its name though, some vigorous plants of *P. inodorum* have been found by Peter de Lange and myself to be mildly lemon-scented (voucher specimen *ROG 11377*, AK 382912).

The flowers of *Pelargonium* differ most obviously from those of *Geranium* in their bilateral rather than radial symmetry. The pelargonium calyx comprises two pairs of equal, partially fused sepals, and on the upper side of the flower, a broader erect sepal. This is prolonged downwards along the pedicel as a tube, at the rounded base of which nectar is produced. The tube is only a few millimetres long in *P. inodorum* but up to 30 mm in some South African species.

Zygomorphy is also seen in the corolla of *Pelargonium*. The two petals adjacent to the enlarged sepal are placed closer together than would be found in a regularly pentagonal arrangement. These 'flag' petals are slightly larger than the others, relatively intensely coloured, and marked by stronger lines of colour. Also, there is usually some specialization of the male part of

the pelargonium flower. Those flowers of *P. inodorum* that I have examined closely (*ROG 11377*) have only seven stamens (cf. the ten of *Geranium*), with the three dorsal (uppermost) ones, particularly the one directly above the mouth of the nectar tube, having anthers much reduced in size. A last detail: the innermost parts of the pelargonium flower, that is, the whorl of stamens and the five fused carpels, are not located centrally — because of the development of the nectar tube they are displaced towards the base of the lower pair of sepals and thus sit more or less opposite the mouth of the nectar tube. These details are shown in Figs. 1–3.

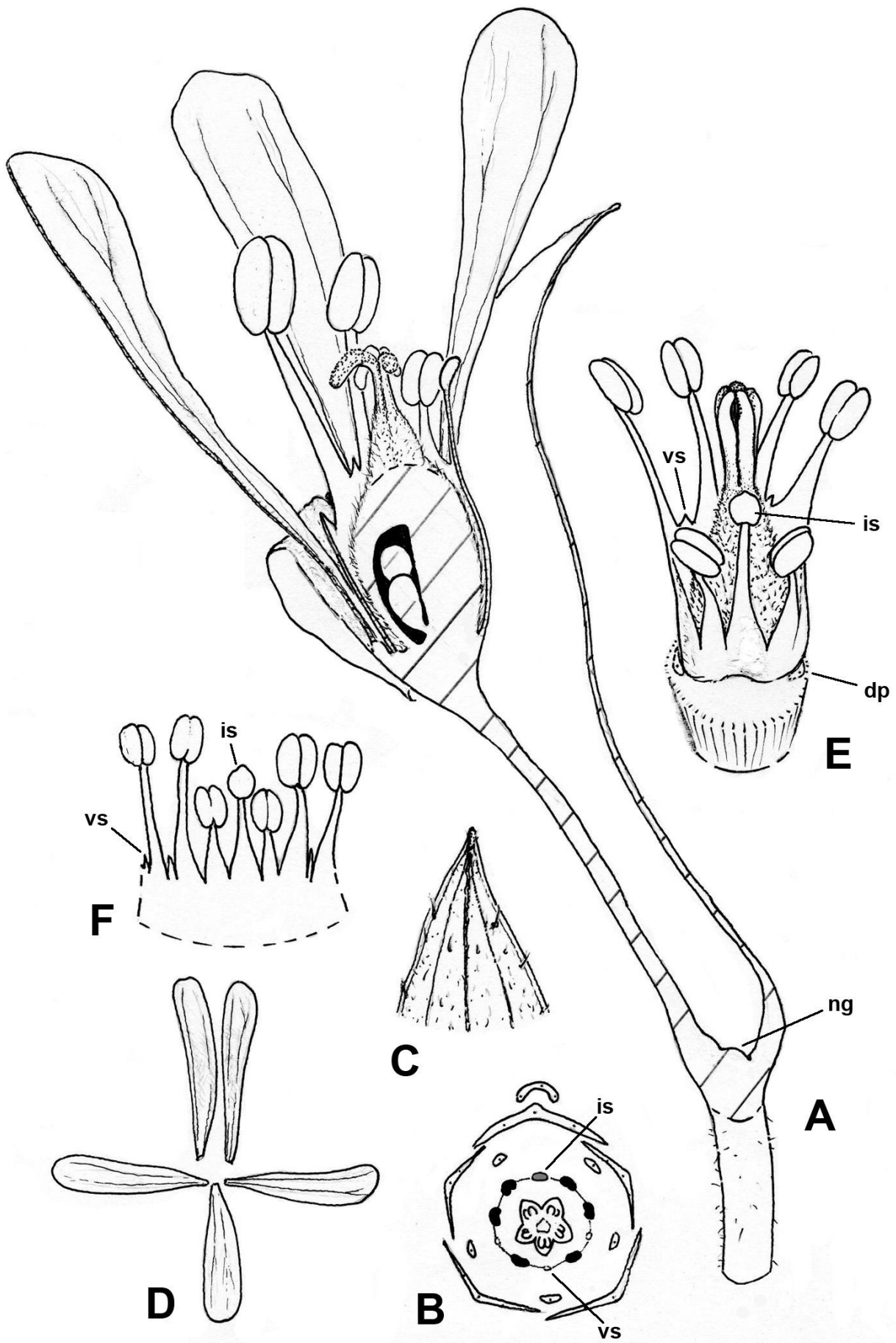
In South Africa the larger-flowered pelargoniums are pollinated by flies with remarkably long tongues. Some of these are also pollinators of long-tubed members of the Iridaceae, such as *Ixia* and *Lapeirousia* species (Blank 2014; Goldblatt & Manning 2000;).

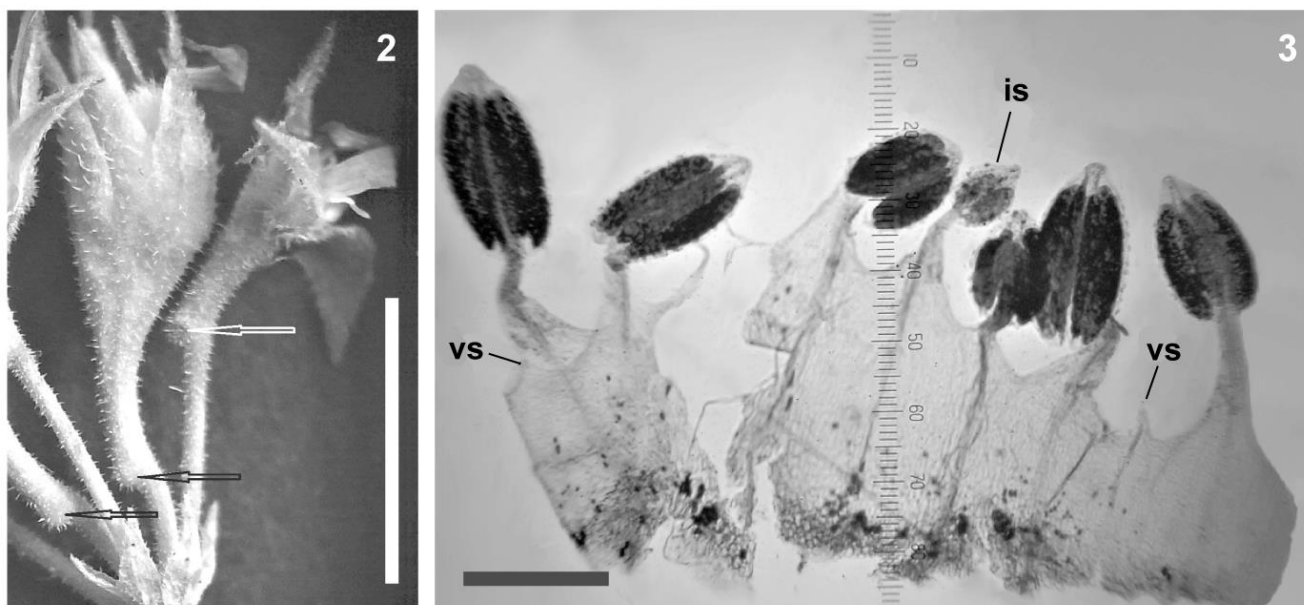
The flower of *Pelargonium inodorum* is perhaps the smallest in the genus and its flag petals are hardly enlarged, with colour markings seen merely as a deeper shade of magenta along the longitudinal veins. As noted above, these flowers appear to be regularly self-pollinating. When the flower bud opens, its stigmas lie only a short way above the dehiscent anthers and if not coated with pollen at this time they inevitably become so as they recurve with age. The flowers are scentless and have a small amount of nectar. I do not know what native insects might visit them.

**Note 1** Habitats of *P. inodorum* as recorded for some of the more recent specimens in the Auckland War Memorial Museum Herbarium (AK): trackside in sand dune forest; on soil pile [leaves 8 cm diam.]; roadside; grassy rocks in scrub; clay bank; vacant section in city; under planted trees on basalt; in dry ditch in teatree scrub; burnt area on sand spit; bush edge; steep grassy slope among *Rytidosperma*; open area after burning of pines.

**Fig. 1.** Flower of *Pelargonium inodorum*. Based on *ROG 11377*, AK 382912.

**A** Flower, near-median longitudinal section. x 25. **ng** = nectary gland. **B** Floral diagram, the dorsal, basally prolonged sepal shown uppermost, with the pedicel bract above. The 10 structures in the staminal whorl comprise six fertile anthers (black), one infertile anther (**is**, grey) opposite the dorsal spur, and three vestigial stamens (**vs**). **C** Free part of dorsal sepal, shortly and stiffly hairy, some hairs tubercle-based. x 15. **D** Petals, the dorsal pair not notably larger or more intensely coloured than the others. x 10. **E** Staminal ring and gynoecium (viewed from dorsal side), with the opening of the dorsal spur in front. Note the shorter stamens flanking the dorsal infertile stamen (**is**). Two vestigial stamens (**vs**) visible. **dp** = attachment point of dorsal petals. **F** Staminal ring opened out, the dorsal stamen (with its infertile anther, **is**) central. Note the three vestigial stamens (**vs**) reduced to tiny remnants. x 20. Drawn by the author.





**Figs. 2 & 3:** 2. Flowers of *P. inodorum*, showing nectar tubes (bases arrowed). Scale bar 5 mm. *ROG 11377*.

3. Staminal ring of *P. inodorum*, showing reduction of the three stamens that lie closest to the nectar tube, especially the central one (**is**), which is much smaller (0.25 mm diam.) than the adjacent pair and appears to lack pollen. Also visible are two of the three vestigial stamens (**vs**). Scale bar 1 mm. *ROG 11377*.

*Pelargonium inodorum* also occurs widely in Australia, where there are also several other, rather similar, small-flowered species. They are distinguished from one another particularly by the length of the nectar spur and the kind of hairs on the calyx. It seems likely that all of them have more or less unscented foliage. In view of there being several Australian species of *Geranium* wild in New Zealand it is surprising

that we have not yet found some of these other pelargoniums wild here too.

However, another small-flowered species, the South African *P. grossularioides*, is said to have naturalised in California and India. It is grown in gardens, e.g., in south-east Australia (Spencer 2002), and its leaves are scented of coconut.

# References

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