Pelargonium inodorum (Geraniaceae) and its plumose fruit

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One of the treasures of the Oratia Native Plant Nursery is a magnificent stock-plant of this usually rather nondescript herb, *Pelargonium inodorum* (Maori name *kopata*). Admiring it last December I fell for a short time into the delusion that some daisyfamily weed was invading its pot: all through the pelargonium's metre-high "canopy", across its umbels of pretty little pink flowers, were pale-hairy structures several centimeters in diameter, as if some great amount of thistle seed had parachuted in for the takeover.

In fact, the plumose hairs belong to the fruits of *P. indorum*, being located on their "awns": the strips of stylar tissue that run up the characteristic fruit-beak and separate from one another in ripening (Figs. 1, 2). It seems they represent a generic character for *Pelargonium*, although they are present (always to a



Fig. 1. *Pelargonium inodorum*, fruit and seeds. All drawings by author from AK 330906, Mayor Island. **A.** Mericarp, oblique view, showing the hairy mericarp body (1.5 mm long) and the basally twisted, plumose awn; In the enlargement of the base of one of the long hairs (0.025 mm diam.) note the narrow spiralled lumen. **B.** Mericarp, adaxial view, showing the dark seed (1 mm long) inside the hairy mericarp body, and, in this case, the basally twisted, hairy (but not plumose) awn. **C.** Seeds (1.5 mm long). left: abaxial view, centre: side view, right: adaxial view, showing sub-basal micropyle.



Fig. 2. *Pelargonium inodorum*. Two fruits and two detached mericarps. Scale bar 1 cm. Image by author from AK 330906, Mayor Island.



Fig. 3. *Geranium* "Oakley Creek". A dehisced fruit, the stylar strips ("awns"), 1.5 cm long, recurved but not twisted. Image by author from a cultivated plant, no voucher.

lesser degree?) in related genera too. The hairs in *P. inodorum* are half a centimetre or so long. They are unicellular and have a very narrow and spiralled cell lumen. Presumably they are outgrowths of the inner epidermis of each of five styles.

It seems unlikely that the plumed hairs can be of much use in helping *P. inodorum* disperse on the wind, the seeds being comparatively heavy, but they may be more effective in other species. The Oratia plant also revealed that not all the awns from a single *P. inodorum* flower are plumose — as if the species, having found its way to New Zealand from the harsher environments of Africa or Australia, is now trying just to stay in place (compare Figs. 1A and 1B).

The three genera of the Geraniaceae, *Erodium*, *Geranium* and *Pelargonium*, as represented in New Zealand (Figs. 2–4), can be distinguished when the ripe fruit has dried out and dehisced, as follows:

 Stylar awns recurving and loosely twisting a few times near base, plumose unicellular hairs (to c. 5 mm) usually conspicuous on adaxial faces of at



Fig. 4. *Erodium cicutarium* A dehisced fruit, its "storksbill" style 3 cm long, and three detached mericarps. Enlargement showing the indurated, short-bristly mericarp body (5 mm long). Image by author from AK 14357, Santoft.

least some of the awns of a single fruit; mericarps somewhat rounded and retaining the seed, not pungent or with dense coarse bristles ... *Pelargonium* (*P. inodorum* at least) (Fig. 2)

- 2. Stylar awns recurving (often elastically, to throw the seeds from their mericarps), not spirally twisted, without long adaxial hairs; mericarp body rounded at base, hairy but not stiffly bristly ... *Geranium* (Fig. 3)
- 3. Stylar awns closely spirally twisted in basal half, a few long brown stiff (multicellular ?) bristles present on the adaxial face of the awns but (always ?) without plumose unicellular hairs; mericarp body relatively hard and pungent, densely set with short strong upwards-angled bristles, retaining the seed ... *Erodium* (Fig. 4)

It is well-known that the twisting and untwisting of the awns of *Erodium* spp., as dry periods alternate with wet ones, result in the gradual burial of the mericarps and their seeds a few millimeters below the soil surface. Perhaps this is the case for *P. inodorum* too.