

# THE (NOT QUITE SO) ELUSIVE *CAREX INOPINATA*

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Line drawing and postscript by Hugh Wilson

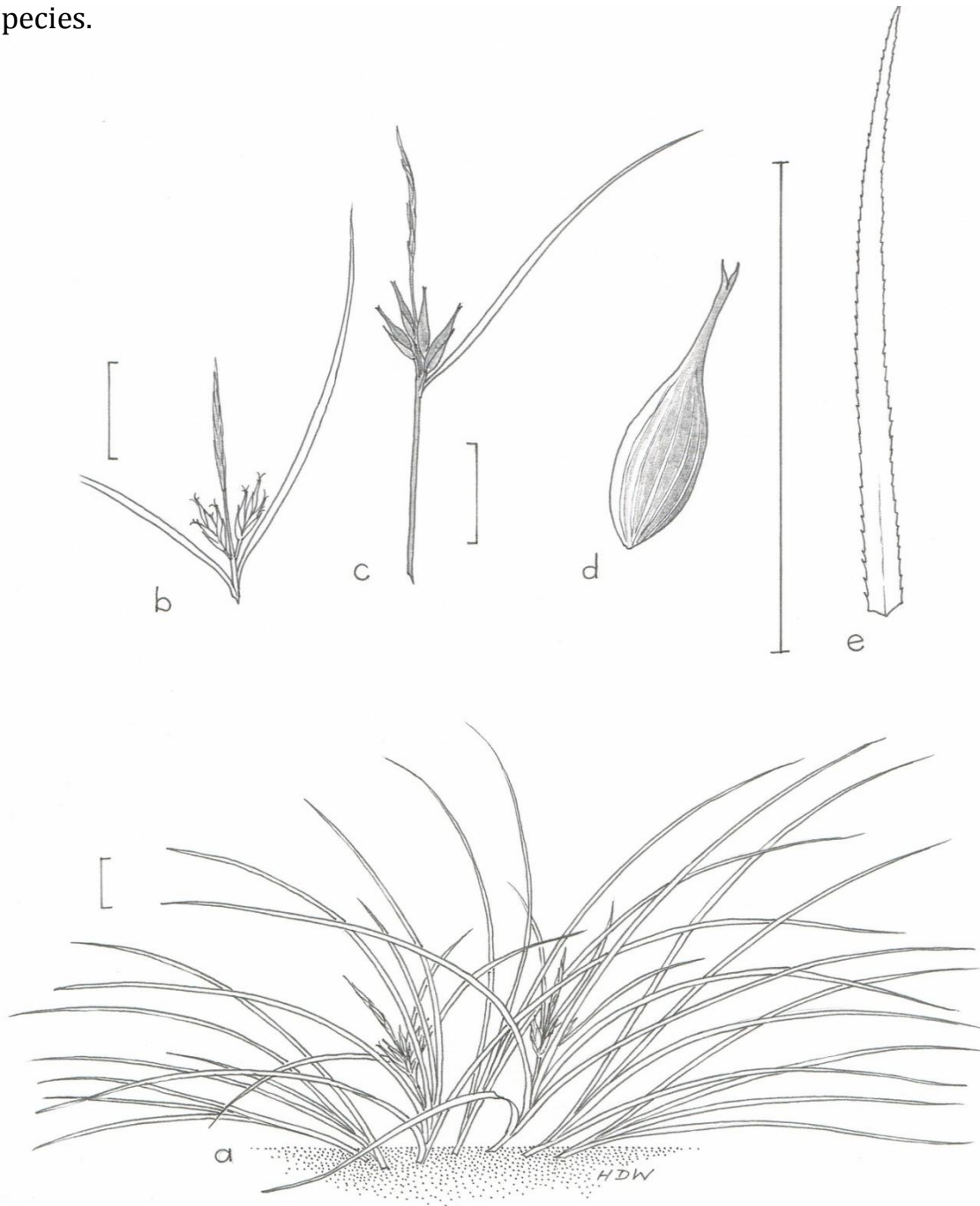
Several threatened plants seem to have attracted a special mystique, few more so than the small grass-like sedge *Carex inopinata* (Fig. 1, page 20). The species was first recognised in 1946 at Castle Hill by Springfield school teacher and keen amateur botanist Harry Talbot, who had a particular interest in the flora of the central and northern half of the South Island, plus a fascination for sedges. Harry was an active member of the Canterbury Botanical Society, and was awarded the Senior Bledisloe Trophy in 1979 for his “outstanding work in inspiring and helping people to become botanists” (Godley 2000).

*Carex inopinata* was formally described in 1953 by Harry’s contemporary Varner James Cook, another school teacher (then based at Ohakune) and apparently also a very proficient amateur botanist. The species name *inopinata* translates as “unexpected”, alluding to the fact that the plant tended to be surprisingly difficult to find. In his description, Varner wrote “the discovery of this plant is a tribute to Mr H. Talbot’s painstaking method of collecting” (Cook 1953).

*Carex inopinata* has fine leaves less than 2 mm wide and is rhizomatous, with mature plants forming loose mats occasionally over 1 m broad. The leaves have scabrid margins near their tips, but are characteristically smooth lower down (Moore & Edgar 1976). It appears to prefer dry fertile habitats, and has historically been associated with limestone outcrops and high-fertility alluvial soils (Head & Buunk 2005). Being relatively small, it is easily overtopped by larger grasses, and appears to be confined to overhangs or understorey sites where potentially competitive grasses are suppressed or excluded by shading. A trial has shown that *Carex inopinata* puts on vegetative growth and tillers significantly more under moderate shading (around 33% of natural light) than it does under full light or very heavy shade (Norton & Morgan 1992).

*Carex inopinata* is superficially similar to several other species of fine-leaved *Carex*, *Uncinia*, and some grasses that occasionally occur in similar habitats. While differentiation from grasses is not too difficult, reliable differentiation from other fine-leaved *Carex* and *Uncinia* species generally requires flowering or fruiting material. Wild plants of *Carex inopinata* appear to be very shy flowerers, and reproductive material is not available year round. Collecting small amounts of vegetative material and growing these on in a container can be required. Cultivated plants collected from

wild sources have been known to flower profusely under shade-house conditions – rather begging the question of just what conditions initiate flowering. Searching the litter around wild plants will occasionally reveal detached utricles, which seem to persist in the typically dry habitat of the species.



**Figure 1a** Flowering plant of *Carex inopinata*, **b** inflorescence showing slender male spike above, two shortly stalked female spikes beneath, and leafy bracts, **c** infructescence showing remains of male spike above, four ripe utricles beneath, and elongated culm, **d** utricle showing slender beak, bifid at the tip, and **e** leaf tip showing finely scabrid edges. Scale bars = 10 mm. Original drawing by Hugh Wilson.

The flowering and fruiting of *Carex inopinata* are quite distinctive. Flowering begins in about early October, with a male spikelet held well above two or three female spikelets on short peduncles. The glumes, which are slightly shorter than the utricles, tend to be streaked a distinctive red-brown, and the long utricle apices also take on this colour as they mature.

Such was the paucity of confirmed records that the species is assigned the rank of Nationally Endangered in the Department of Conservation's 2008 New Zealand Threat Classification System lists, and in de Lange & Rolfe (2010), with qualifiers that it is regarded as Conservation Dependent, Data Poor and Sparse (de Lange et al. 2010). Similarly, it was included with a handful of other threatened monocots under the Department's "Recovery plan for threatened grassy plants of dry fertile sites 2003-13" (Jones 2004). The authors of this recovery plan were aware of the apt specific name, and noted that "... the cryptic nature and scattered distribution over wide areas raises the possibility that the rarity of this plant ... may be apparent rather than real". All records are from the east coast of the South Island, spread irregularly from Marlborough through to Southland. In early 2010, Allan Herbarium specimens included only two from Canterbury with full habitat descriptions, one older one from Castle Hill (the type locality), the other more recent from Mount Pleasant on the Port Hills. There were also a few other confirmed Canterbury records without lodged herbarium specimens.

During DoC survey work on North Canterbury limestone sites in 2004 to 2006, *Carex inopinata* was twice found growing under dwarf kowhai (*Sophora prostrata*) in very dry situations, albeit once on limestone and once (at the time surprisingly) on nearby greywacke. Fortuitously (indeed wisely), this habitat description was passed on to a number of other field botanists, in case they should be working in similar habitats.

Whilst monitoring a dryland shrubland QEII covenant in North Canterbury in early 2010, a quick check was made under a patch of *Sophora prostrata* and *Coprosma crassifolia* scrub, in the off-chance that the elusive *Carex inopinata* might be lurking. This search involved prostrating oneself at the edge of a dense copse and literally wriggling towards the interior. Like many North Canterbury dryland shrubland remnants, the groundcover was very sparse – but included numerous sharp objects. Surprisingly, *Carex inopinata* was located within only a few minutes, occasional fruit providing the clinching evidence.

This was at first assumed to be somewhat serendipitous, though it was quickly resolved to check all similar habitats in other dryland shrubland covenants – just in case. Because of the requirement to monitor covenants regularly, the opportunity arose to do this over the next couple of years. What rather surprises is that similar fine-leaved rhizomatous sedge plants are being found in virtually all cases. In most covenants a suspect sedge was found within a few minutes of searching, some sites revealing a number of plants. A few covenants required a more exhaustive and

(literally) painstaking search, with considerable amounts of likely habitat seemingly unoccupied.

Several of the visits have been at times of the year when reproductive material could not be found, so a small divot of a suspect sedge was collected and grown on. A good flowering of these potted specimens in the following spring revealed almost all to be *Carex inopinata*, with lax forms of *Carex breviculmis* making up the balance. As if to complicate the identification process, one potted divot revealed both species growing together.

New records from QEII dryland covenants now include six from North Canterbury and two from Banks Peninsula. Some covenants with potentially suitable habitat have yet to be closely checked. A few other plants have been recorded on unprotected private land and in reserves, and specimens from several sites have recently been lodged at the Allan Herbarium.

Given that most of Canterbury's dryland scrub occurs on working farms, in places that generally will not have been ecologically assessed, there is scope for the species to be considerably more wide-spread and common than was previously thought. That said, its apparent North Canterbury habitat is of naturally restricted extent. Most sites identified to date are characterised by drought-resistant grey scrub communities dominated by (especially) *Sophora prostrata*, plus combinations of *Coprosma virescens*, *C. crassifolia*, *C. propinqua*, *Myrsine divaricata*, *Melicytus alpinus* agg. and *Discaria toumatou*, often entwined by *Muehlenbeckia complexa* and *Rubus schmidelioides*. Regular groundcover associates include *Asplenium flabellifolium*, *Dichondra repens* and *Einadia allanii* (itself Naturally Uncommon). Most of these sites are generally on or close to greywacke rock outcrops, especially on the crests and knolls of broad ridges where shallow but relatively stable soils have accumulated.

This sort of habitat would probably once have been associated with drought-prone sites capable of supporting only sparsely-canopied forest, scrub or shrubland. Since the arrival of people, most such sites would have been subject to damage from fires, but nowadays are probably more vulnerable to clearance with herbicides. Rabbits share a liking for such habitat. However, the presence of *Carex inopinata* after more than a century of rabbit pressure indicates that it must be reasonably tolerant of rabbit browsing, though it does appear to be intolerant of extensive soil disturbance. Persistent browsing by livestock seems to limit the plant, and it seems to be intolerant of heavy scuffing in sites where livestock regularly camp under trees, shrubs and overhangs.

Thankfully *Carex inopinata* does not appear to confine itself entirely to the deeper recesses of scrubby thickets. In some instances the canopy can be so dense that neither it nor its usual groundcover associates can persist. It

can sometimes be found quite easily nestled under southern aspects of individual shrubs, though even there its diminutive and cryptic nature still usually requires the searcher to get down on hands and knees.

A few North Canterbury sites are rather different. In one, several sizeable clumps of *Carex inopinata* have been found on dry fertile alluvial soils at the top of an exposed riparian scarp, rambling among *Pyrrosia eleagnifolia* under a forest canopy of *Kunzea ericoides*, *Lophomyrtus obcordata*, *Melicytus ramiflorus* and occasional *Nothofagus solandri* var. *solandri*. However, the key habitat characteristics of dryness, shading and high fertility are still present. Another habitat was recently discovered on the Port Hills when volcanic rock outcrops were surveyed for flora that might be accidentally affected during planned weed control. There, *Carex inopinata* was located at several sites, usually in clefts between boulders which provided the habitat required for *Carex inopinata*, often without overhead trees and shrubs yet partially shaded and protected from high livestock pressure. Plants on the Port Hills and Quail Island have also been recorded growing in plantations of exotic conifers, apparently finding the conditions under a canopy of pines to be within their limits of tolerance.

Otago DoC staff have also been finding *Carex inopinata* recently, and as in North Canterbury have been able to identify what they call a “predictable microhabitat” where the species can reasonably often be found.

The tolerance of *Carex inopinata* to drought and shading may open up opportunities for its use in horticulture. It has the outward appearance of lush dark green lawn grass and should be capable of growing under the canopies of trees in dry sites where lawn grasses generally fail to perform. The related *Carex inversa* already has a reputation for growing in lawns, sometimes to the point of being deemed a weed, though it apparently prefers damp soils.

There is an opportunity to check other east-coast South Island dryland shrublands and rockfields, and to formally update our understanding of *Carex inopinata*. This might involve a specific survey, or just checking out those predictable microhabitats when carrying out other survey work. The plant appears (thankfully) to be significantly less rare than earlier believed. However, with such specific habitat requirements and continuing habitat destruction, it remains vulnerable and deserving of on-going monitoring and protection. Passing on details of any new records to local DoC staff and/or lodging specimens in a herbarium will help to build up our knowledge.

In hindsight, we can credit Varner Cook with having given *Carex inopinata* a particularly suitable specific name – at least relative to the last fifty years. However, the occurrence of the species now seems to have become somewhat less “unexpected”.

## Acknowledgements

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## References

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## Postscript

A little grass-like sedge potted up from Hinewai Reserve’s Valley Track in late August 2012 dutifully flowered in October, and has revealed its identity as *Carex inopinata*, growing in rather moister valley-floor conditions than expected, under tall kānuka at about 150 m altitude.