

Short communication

A new combination for a *Coprosma* endemic to the serpentinised zone of the Surville Cliffs, North Cape, New Zealand

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Abstract A molecular phylogenetic analysis of New Zealand *Coprosma* using the internal transcribed spacer (ITS) and external transcribed spacer (ETS) regions of nrDNA discovered a consistent ITS sequence difference of eight base pairs between multiple samples of the widespread *Coprosma obconica* subsp. *obconica* and samples of the North Cape ultramafic endemic subsp. *distantia*. These DNA sequence results, coupled with those differences already described for both subspecies and the subsequent discovery of significant differences in the pyrene morphology of both subspecies, indicate that *C. obconica* subsp. *distantia* should be elevated to species rank. The necessary combination at the rank of species is made in this paper.

Keywords Rubiaceae; *Coprosma distantia*; *C. obconica*; *C. obconica* subsp. *distantia*; *C. obconica* subsp. *obconica*; pyrene morphology; nrDNA ITS sequences; New Zealand flora

INTRODUCTION

In their revision of *Coprosma obconica*, de Lange & Gardner (2002) recognised a new subspecies, *C. obconica* subsp. *distantia*, as a widespread endemic of the serpentinised peridotite rocks of the remote Surville Cliffs portion of the North Cape Peninsula. They distinguished subsp. *distantia* from the nominative subspecies on morphological grounds; subsp. *distantia* differs by its prostrate, trailing habit, unblemished cream or pale lemon-coloured fruits, and restriction to ultramafic rocks. Furthermore, they noted that both subspecies shared the same chromosome number ($2n = 44$) and flavonoid profile.

While the work of de Lange & Gardner (2002) was in submission with the *New Zealand Journal of Botany*, an account of the seeds of New Zealand gymnosperms and dicotyledons was published (Webb & Simpson 2001). Webb & Simpson (2001) noted significant differences in the size and shape of the pyrenes of *C. obconica* subsp. *distantia* (as *Coprosma obconica* ssp. “serpentina”) in comparison with *C. obconica* subsp. *obconica*. In particular, the pyrenes of subsp. *distantia* are much larger, have a less pronounced curvature of the dorsal surface, and lack the distinct notch of the ventral surface so characteristic of subsp. *obconica*.

Furthermore, while de Lange & Gardner (2002) was being finalised for publication, a molecular phylogenetic analysis of New Zealand *Coprosma* using the internal transcribed spacer (ITS) and external transcribed spacer (ETS) regions of nrDNA was being undertaken at the University of Auckland (Wichman 2000; Wichman et al. 2002). One result from this study was the discovery that a sample of the Surville Cliffs *Coprosma obconica* (subsp. *distantia*) differed in the ITS region from a sample of *C. obconica* (subsp. *obconica*) from Mataroa, near Taihape, by eight base pairs. There were a further three nucleotide differences in the ETS sequence. Although these differences are significant with respect to other New Zealand *Coprosma* species (Wichman et al. 2002), only single samples were

analysed from just the North Cape and Taihape populations.

Subsequently, wider sampling of *Coprosma obconica* encompassed the full range of the species. A second specimen of *Coprosma obconica* (subsp. *distantia*) from the Surville Cliffs had ITS sequence identical to that obtained originally. Ten additional individuals of *Coprosma obconica* (subsp. *obconica*) from five different locations in the South Island ((arranged from north to south) Mt Burnett, Nelson (1 individual); Wakefield, Nelson (4 individuals); Howard Valley, Nelson (2 individuals); Coopers Creek, Canterbury (1 individual); and Akatore Inlet, Otago (1 individual)) had ITS sequences identical to that obtained from Taihape*. The consistency of the ITS sequences from widely dispersed geographic locations confirms the original differences noted by Wichman (2000).

In addition, a sample of the Surville Cliffs endemic *Coprosma spathulata* subsp. *hikuruana* (de Lange & Heenan 2001) was also sequenced. It too is an allopatric ultramafic variant of a more widespread species (*C. spathulata* subsp. *spathulata*) differing from that subspecies by its decumbent habit and ellipsoid fruits. In contrast to the situation found with *C. obconica* subsp. *distantia*, the ITS sequence of *Coprosma spathulata* subsp. *hikuruana* was identical to that found in two individuals of *C. spathulata* subsp. *spathulata* from different locations (Whangarei, Hunua).

These DNA sequence results and pyrene differences indicate that *C. obconica* subsp. *distantia* should be elevated to species rank. Accordingly, the necessary change in rank for *C. obconica* subsp. *distantia* is here made.

*In *Coprosma*, we have found mixed ITS sequences in about half of all diploid *Coprosma* individuals and that they can arise from interspecific hybridisation (Wichman et al. 2002). Therefore, in cases where mixed nucleotides were found in *C. obconica* samples, they were taken as "identical" if one of the mixed nucleotides corresponded to the single nucleotide found at that site in the other samples.

TAXONOMIC TREATMENT

Coprosma distantia (de Lange et R.O.Gardner)
de Lange, comb. et stat. nov.

≡ *Coprosma obconica* subsp. *distantia* de Lange et R.O. Gardner, *N.Z. Jour. Bot.* 40: 25–38 (2002).

HOLOTYPE: Te Pahi, North Cape Scientific Reserve, Surville Cliffs; *P. J. de Lange 4183* & *M. Ritchie*, 19 January 2000; AK 246820.

ISOTYPES: CHR, FI, PERTH, WELT.

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