New Zealand Journal of Zoology
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tnzz20

Scree weta phylogeography: Surviving glaciation and implications for Pleistocene biogeography in New Zealand

Steven A. Trewick [a] [b]

[a] Department of Zoology, University of Otago, P. O. Box 56, Dunedin, New Zealand

[b] Department of Plant and Microbial Sciences, University of Canterbury, Private Bag 4800, Christchurch, New Zealand

Version of record first published: 30 Mar 2010.

To cite this article: Steven A. Trewick (2001): Scree weta phylogeography: Surviving glaciation and implications for Pleistocene biogeography in New Zealand, New Zealand Journal of Zoology, 28:3, 291-298

To link to this article: http://dx.doi.org/10.1080/03014223.2001.9518271

New Zealand Journal of Zoology, 2001, Vol. 28: 291–298
0301–4223/01/2803–0291 $7.00/0

Scree weta phylogeography: surviving glaciation and implications for Pleistocene biogeography in New Zealand

STEVEN A. TREWICK*
Department of Zoology
University of Otago
P. O. Box 56

INTRODUCTION

Pleistocene climate change and glaciation have been advanced to explain distribution patterns among many New Zealand organisms. Two types of effect

invertebrates in New Zealand are few (but see Emerson & Wallis 1995; King et al. 1996; Buckley et al. 1998; Trewick 2000a). Phylogeography has proven effective in revealing the extent to which the

method of Sunnucks & Hales (1996). Molecular analysis used primers that target part of the mitochondrial DNA (mtDNA) cytochrome oxidase I gene (COI). These primers are known to be highly

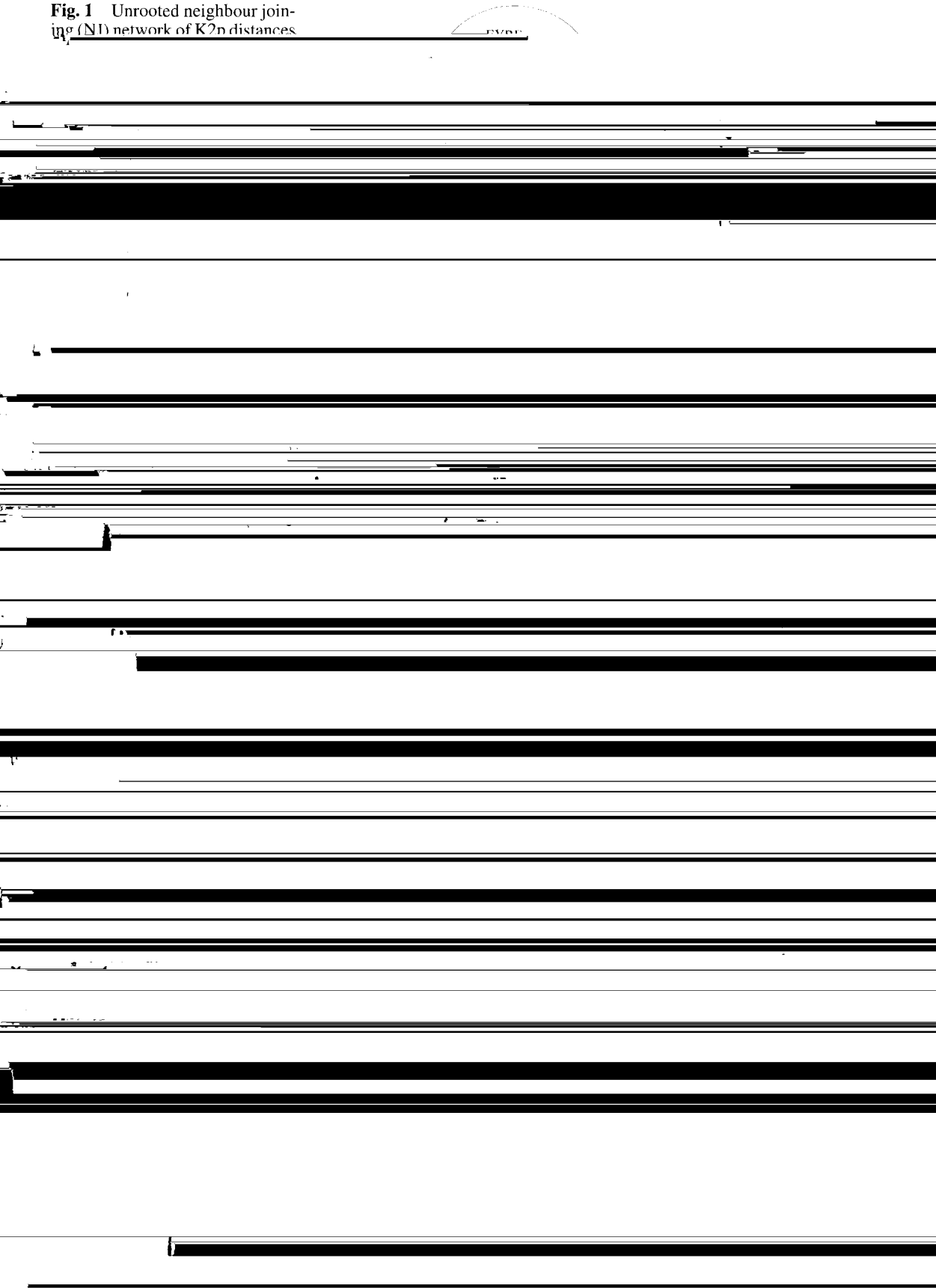

Fig. 1 Unrooted neighbour joining (NJ) network of K2p distances

Fig. 2 Map of the South Island, New Zealand, showing sites sampled for cave wetas. Filled boxe

ranges are extensive but ice was scarce during

comparatively low in the central waist of the South

possible when the alpine zone extended more widely than today (McGlone 1988), resulting in the wide distribution of lineage a (Fig. 1). The presence of

this region are alpine specifics (McGlone 1985), but some alpine endemics are present (Cockayne 1917; Wardle 1963; Burrows 1965). The evidence from

Modern montane habitats in the South Island are considered to be more similar (more humid and with

REFERENCES

Emerson, B. C.; Wallis, G. P. 1995: Phylogenetic rela-

tionships of the *Prodontria* (Coleoptera; Scarabaeidae; Subfamily Melolonthinae), derived from sequence variation in the mitochondrial cytochrome oxidase II gene. *Molecular Phylogenetics and Evolution 4*: 433–447.

Field, L. H. 1980: Observations on the biology of *Deinacrida connectens* (Orthoptera: Stenopelmatidae), an alpine weta. *New Zealand Journal of Zoology 7*: 211–220.

Fleischer, R. C.; McIntosh, C. E.; Tarr, C. I. 1998: Evolution on a volcanic conveyor belt: using phylogeographic reconstructions and K-Ar-based ages of the Hawaiian Islands to estimate molecular evolutionary rates. *Molecular Ecology 7*:

Joseph, L.; Moritz, C.; Hugall, A. 1995: Molecular support for vicariance as a source of diversity in rainforest. *Proceedings of the Royal Society, London B 260*: 177–182.

Juan, C.; Oromi, P.; Hewitt, G. M. 1995: Mitochondrial DNA phylogeny and sequential colonization of Canary Islands by darkling beetles of the genus *Pimelia* (Tenebrionidae). *Proceedings of the Royal Society, London B 162*: 173–180.

Kimura, M. 1980: A simple method for estimating evolutionary rate of base substitutions through comparative studies of nucleotide sequences. *Journal of Molecular Evolution 16*: 111–120.

King, T. M.; Wallis, G. P.; Hamilton, S. A.; Fraser, J. R. 1996: Identification of a hybrid zone between

Morgan-Richards, M.; Gibbs, G. W. 1996: Colour, allozyme and karyotype variation show little concordance in the New Zealand Giant Scree Weta [illegible] (Orthoptera:

Swofford, D. 1998: Phylogenetic analysis using parsimony (and other methods) PAUP* 4.0 beta version. Sunderland, Sinauer Associates.