has so far revealed no gross morphological differences among sister species (Trewick 1998), Tait &

Onychophora for instance, a group noted for their morphological conservatism, genetic methods have

logical characteristics (15 pairs of legs, midventral openings of anal glands in males, and lack of crural glands) in the Dunedin taxon distinguished it from

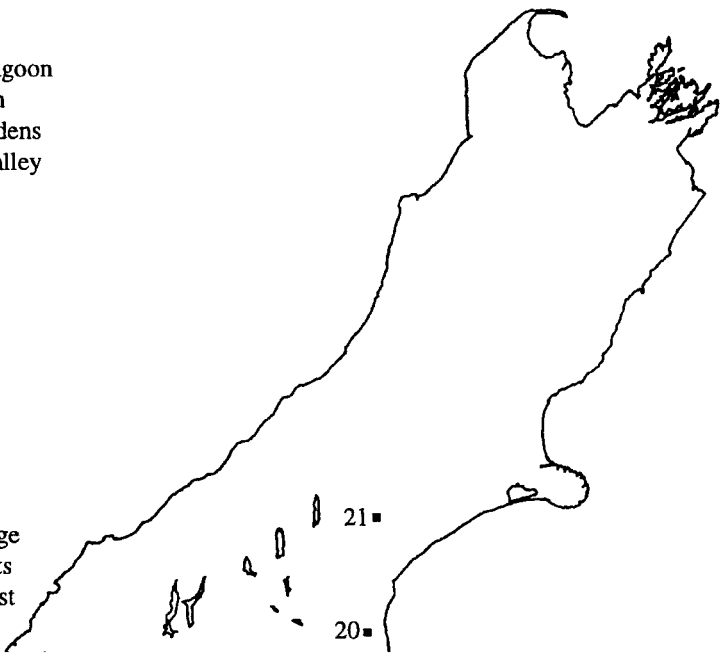
1995), stimulated revision of morphology based taxonomy (Reid 1996) and provided insights into the origin of diversity within, and biogeography of, spe-

METHODS

Peripatus specimens were collected in the environs of Dunedin City and up to 220 km from it (Fig. 1). This collecting area is probably close to the range

and NotLEUr (see Results for details). PCR reactions were performed in 25 µl volumes and products gel-purified in 2% agarose stained with ethidium bromide. Bands of expected molecular weight were

1 Styles Creek
2 Tomohawk Lagoon
3 Grahams Bush
4 Botanical Gardens
5 Caversham Valley
6 Frasers Gully
7 Saddle Hill
8 Whare Flat
9 Taieri Mouth
10 Outram
11 Maungatua
12 Piano Flat
13 Toms Creek
14 Matai Falls
15 Haldane
16 Hokonui
17 Trotters Gorge
18 Kakanui Mnts
19 Herbert Forest
20 Gunns Bush



"ATG" codon typical of many insects (Szymura et al. 1996). I designed primers in relatively conserved

ble 2).

Table 2 Genetic distance among ingroup and outgroup peripatus (Kimura 2 parameter below diagonal, amino acid number above diagonal) The two groups (A

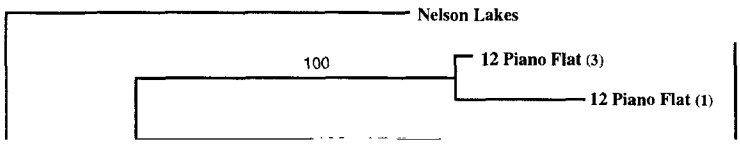
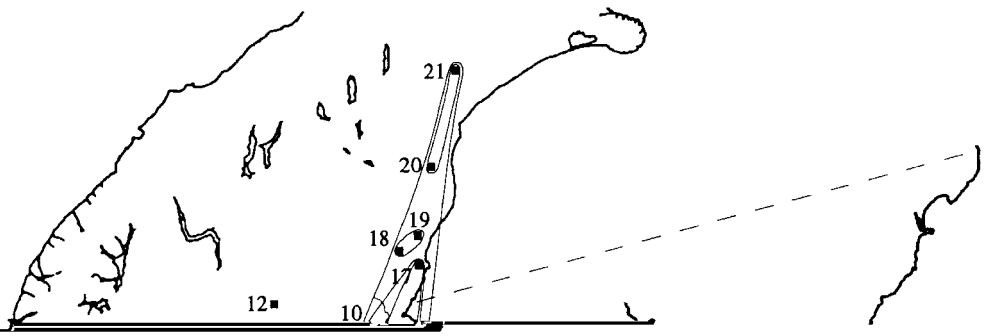


Fig. 2 Maximum-parsimony bootstrap phylogram of COI DNA sequences from peripatus. Numbers above edges are percentage


21
20
19
18
17
12
10

that the opportunity to rehabilitate and protect such

should not be overlooked in conservation plan

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Appendix 1—Sequence data from eighteen distinct 540 bp haplotypes of a mtDNA COI gene fragment from peripatus collected in the Dunedin area, New Zealand

```
Haldane          .A..T........A......C.T.............T.....................T.................A...G..T.A.....................
Tomohawk Lgn.    .A..T..............C.................T..T..A.....................G..T.....A..A...G..T.A..........A.....
Style's Creek    .A..T..............C.................T..T..A.....................G..T.....A..A...G..T.A..........A.....
Outram           .A..T......C.......C.................T..T..A.............C.......A..T.....A..A...G.CT.A..........A.....
Saddle Hill      .A..T..............C.................T..T..A.....................A..T.....A..A...G.AT.A..........A.....
Maungatua        .A..T..............C.................T..T..A.....................A..T.....A..A...G.CT.A.....C.....A.....
Caversham Vll    .A..T..............C.................T..T..A.....................G..T.....A..A...G..T.A..........A.....
Trotters Gge     .A..T..............C.................T..T..A.....................A..T.....A..A...G..T.A..........A.....
Kakanui Mnt□.    ....T..............C.................T..T..A.....................A..T.....A..A...G.AT.A..........A.....C..
Herbert Frst.    ....T..............C.................T..T..A.....................A..T.....A..A...G.AT.A..........A.....C..
Peel Forest      .A..T..............C.................T..T..A.....................CC....A..A...G..T.A..........A.....
Gunn's Bush      .A..T..............C.................T..T..A.....................A..T.....A..A...G..T.A..........A.....

Nelson           ACATGATACTTATTATGTAGTAGCCCATTTTCATTATGTATTATCTATAGGTGCGGTTTTTGCTATTTTAGGAGGAATAGTTCATTGATTTCCTTTAATTTTAGGTGTAAGATTA
Piano Flat       ......................T.............................A..G.....................................................A..G...A..
Piano Flat       .....................T..T.............................A..G.............T.....................................A..G...A..
Matai Falls      ......................T.............................A..A.....................................................
Tom's Creek      ......................T.............................A..A.....................................................
Taieri Mouth     ......................T.............................A..A.....................................G....G.?.....
Hokonui          ......................T.............................A..A.................G...................................
Haldane          ......................T.............................A..A.....................................................
Tomohawk Lgn.    G.....................T.............T...............T..C.....................................................A.....
Style's Creek    G.....................T.............T...............T..C.....................C...............................A.....
Outram           G.....C.....C.........T.............T...............T..A.....................................................A.....
Saddle Hill      .....C.....[illegible]T.............T...............T..C.....................................................A.....

Caversham Vll    G.....................T.............T...............T..C.....................................................A.....
Trotters Gge     G.....................T.............T...............T..C.........C.......G.....................................A.....
```