

Supplementary material S1

Data matrix exported as an SS file from Winclada (Nixon 2002) data file used for cladistic analysis.

```
xread
''74 42
Archaeocicindis_spp._(PAL)          04000001100112-
10000000000000000000000010011101110?01000001000????0?????????
Cicindis_horni_(ESA)                0?023011100113-
100000010000000000000000100111011?0?0100000120010000?0210-00
Blethisa_multipunctata_(HOL)
1201301010000000010000?20000000110000000001100110?0100000020021010001
01000
Elaphrus_clairvillei_(HOL)
1200301010000000010000020000000011000010000??0?????000000020020010002
01000
Loricera_foveata_(HOL)
0502300000010000010000010000000010010100011100110?0100001020001010001
00-00
Aquilex_diabolica_(ESA)
1201301011011101010000020000000130001110011201010-
000021102100101100100-00
Loxomerus_nebrioides_(AUCK)
02000002100101110121101200111101110001100120100[01]100200200101010011
10100-00
Loxomerus_brevis_(AUCK)
130020021001011101211012001111011100011000201001100100200001010011101
00-00
Loxomerus_huttoni_(AUCK)            1?00100210010111012110120011110--
100011000201?00100?0020000101001110100-00
Taenarthrus_capito_(SINZ)
120010121001011101211012101111011100011100201001110100200001010011011
00-00
Calathosoma_rubromarginatum_(AUCK)  1200000210010101112110120011110--
110111111201?0010010020?0???00001100100-00
Stichonotus_decoloratus_(TAS)
1300202210001101012110120011110121112111102010010-
110020000101002100101110
Stichonotus_leai_(TAS)
1300202210001101012110120011110121112111102010010-
110120000101002100[12]01110
Stichonotus_limbatus_(AUS)
1300202210001101012110120011110121112111102110000-
120120000101002100[12]01110
Stichonotus_piceus_(TAS)
1300202210001101012110120011110121112111102110010-
110020000100002100101110
Calyptogonia_atra_(TAS)
01001022100111010121101000000120001111002010010-
010020110102102100[12]00-00
Nebriosoma_fallax_(AUS)            1?0???032100111?1012110111000000--
000111?00201?010-0?002011010210110020????
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Decogmus_chalybeus_(AUS)
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 Dendromigadops_gloriosus_(AUS)
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 02000?????????10[12]0????
 Amarotypus_edwardsii_(NZ)
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 010010111000102100311210
 Amarotypus_murchisonorum_(SINZ)
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 010020110100102100311210
 Amarozenus_sp._n._embersoni_(SINZ)
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 010020110101102101001300
 Amarozenus_sp._n._marrisi_(SINZ)
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 Amarophilus_otagoensis_(SINZ)
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 Amarophilus_rotundicollis_(SINZ)
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 Migadopiella_convexipennis_(TAS)
 13002012000111010110001011????0231000111102210010-
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 Migadopiella_octoguttata_(TAS)
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 Migadops_latus_(SSA)
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 Migadops_jeanneli_(SSA) 1?00102210011101010000100000000--
 1001112101110010-0100201100011111????0???1
 Pseudomigadops_ovalis_(SSA)
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 0?00201001010111????0????
 Pseudomigadops_falklandicus_(SSA) 1?0??01121111101110000111000000--
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 Pseudomigadops_ater_(SSA) 1?0??01121111101110000111000000--
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 Rhytidognathus_ovalis_(SSA) 1-01201210011101010000111000000--
 0011110002210000-000020010101101110100-01
 Rhytidognathus_platensis_(SSA) 1201201210011101010000111000000--
 0011110002210000-000020010001101110100-01

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Antarctonomus_complanatus_(SSA)
1301200220010101011110101000000120011110002010010-
010000100101001111100-01
Migadopidius_bimaculatus_(SSA)
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011020110011111210100-00
Lissopterus_quadrinotatus_(SSA)
1200100121011101010001121000001110001111001110010-
021020110012111210100-00
Lissopterus_hyadesi_(SSA) 1?00102121011101010001121000001--
0001111001110010-0?10201100121112???0???
Monolobus_testaceus_(SSA)
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00-00
Monolobus_ovalipennis_(SSA) 1-10110220021100012110121000000--
1101110010?10?????0-210101000002???0???
;
cc - 0.73;
proc /;
optcode u 0.73;

#
$
;
cn {0 Mandibular_srobe_seta absent present;
{1 Maxillary_stipes_setation 1 2_at_base 3, 2_basally, 1_medially
4, 3_basally, 1_medially 5_along_length 9_along_length;
{2 Galea_of_maxillary_palps two_articles one_article;
{3 Number_of_setae_on_mentum* 2_straddling_midline_near_mentum_tooth
4, 2_near_midline, 2_basolaterlly many_bordering_margins_of_mentum;
{4 Number_of_setae_on_submentum* 2 4 6 8_or_more;
{5 Submentum_separated_from_mentum
fused_to_mentum, at_least_in_central_region;
{6 Mentum_tooth_simple, apex_rounded_to_angulate
medially_indented, narrowly_bilobed
broadly, slightly_concave_with_broad_lateral_lobes
absent, no_forward_expansion_medially;
{7 Paraglossae_long_distinct_undifferentiated;
{8 Setae_of_glossal_sclerite four two one;
{9 Setae_of_paraglossae absent present;
{10 Labial_and_maxillary_palps elongate short_and_wide, subrounded;
{11 Antennae short, reaching_base_of_elytron
long, reaching_the_basal_third_of_elytra
very_long, reaching_the_middle_third_of_elytra;
{12 First_four_antennal_segments
pubescent_from_apex_of_fourth_segment glabrous;
{13 Supraorbital_setae two_each_side only_one_each_side__ (posterior)
only_one_each_side_ (anterior) absent;
{14 Posterior_supraorbital_seta*
between_eyes, anteriad_their_hind_margin
at_or_posteriad_hind_margin_of_eyes;
{15 Neck present absent;

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{16 Depression bordering hind margin of eye absent present;
 {17 Protibial antennal cleaner*
 isochaetous, longitudinally sulcate, posterior spur subapical
 anisochaetous, transverse, posterior spur displaced proximally;
 {18 Fourth male protarsomere apex truncate
 bilobed, with both lobes equal
 bilobed, with anterior lobe more developed than posterior;
 {19 Fourth male mesotarsomere apex truncate
 bilobed with anterior lobe more developed than posterior;
 {20 Fourth male metatarsomere apex truncate
 bilobed, with anterior lobe more developed than posterior;
 {21 Male protarsomeres* normally dilated more distinctly dilated;
 {22 Male protarsomeres 1-3 with adhesive setae 1-4 or 2-
 4 with adhesive setae;
 {23 Male mesotarsomeres 1-4 dilated 1-3 dilated not dilated;
 {24 Male mesotarsomeres without adhesive setae with adhesive setae;
 {25 Unguitractor plate of fifth tarsomere* with short projection
 with elongate projection nearly 1/5 length of unguis;
 {26 Female protarsomeres not dilated dilated;
 {27 Female protarsomeres with only two rows ventral setae
 with expansive field of ventral setae;
 {28 Female mesotarsomeres 1-4 not dilated dilated;
 {29 Female mesotarsomeres with only two rows ventral setae
 with expansive fields of ventral setae;
 {30 Protibial apex* moderately expanded
 robust overall, very broad apically;
 {31 Anterior pronotal margin* lined with microsetae across breadth
 microsetae present medially but absent near front angles
 microsetae absent medially but present near front angles;
 {32 Posterior pronotal margin* lined with microsetae across breadth
 microsetae present medially, absent near basal angles
 microsetae present in median third, absent laterally
 microsetae absent across breadth;
 {33 Lateral border of pronotum broad narrow;
 {34 Anterior and posterior breadths of pronotum
 of equal or subequal breadth
 posterior breadth markedly greater than anterior;
 {35 Anterior marginal bead of pronotum
 not marked, at least incomplete medially
 marked, distinct across breadth;
 {36 Form of pronotum wider before middle with base constricted
 sides subparallel
 sides diverging toward the back, width maximal at basal margin;
 {37 Basal pronotal setae present absent;
 {38 Lateral pronotal setae present absent;
 {39 Prosternal process
 not extended beyond procoxae except as vertical carina
 extended posteriorly procoxae w/o contacting mesosternum
 dorsally extended posteriorly procoxae to overlap mesosternum;
 {40 Elytral humeri rounded angulate to right;
 {41 Basal border of elytra absent present;

{42 Elytral_striae_1-9 absent, _reduced_to_be_untraceable_on_surface
 discontinuous fine, _continuous;
 {43 Punctation_of_elytral_striae_1-9 absent
 fine_on_base_and_median_disc distinct_in_base_and_median_disc;
 {44 Parascutellar_stria short extended_to_apex_of_elytra;
 {45 Parascutellar_seta* present absent;
 {46 Bases_of_elytral_striae_1_and_2 fused_in_a_common_trunk_basally
 not_fused, _no_common_trunk;
 {47 Elytral_stria_1_and_parascutellar_stria fused_apically not_fused;
 {48 Striae_5_and_6 separated_at_base joined_basally;
 {49 Stem_of_fused_striae_5_and_6* short long;
 {50 Ninth_elytral_stria not_crimped_on_the_base
 bent_inwards_at_the_base_and_attached_to_the_eighth;
 {51 Elytral_marginal_setae_in_interval_9* 6-7 10-14 16-22;
 {52 Elytral_coloration uniform, _concolorous_on_disc
 with_subapical_patch_of_reddish_color;
 {53 Elytral_marginal_coloration
 margin_concolorous_to_evenly_paler_apically
 margin_with_irregularly_undulated_pale_areas_apically;
 {54 Metathoracic_wings* Present
 Brachypterous, _apex_extended_more_than_half_elytral_length
 Reduced, _beetles_apterous;
 {55 Male_aedeagal_median_lobe_base open_ventrally closed_ventrally;
 {56 Median_lobe_basal_carina absent present;
 {57 Dorsoventral_width_of_median_lobe* thin broad;
 {58 Ostium_position_at_median_lobe_apex*
 on_right_(ventral)_side_of_lobe on_left_(dorsal)_side_of_lobe
 on_medial_surface_of_lobe, _dorsal_when_everted;
 {59 Ostium_opening* broad_opening_on_dorsal_aedeagal_surface
 constricted, _a_small_opening_on_aedeagal_surface;
 {60 Ventral_region_of_median_lobe_apex* straight, _narrow
 expanded_euventrally;
 {61 Left_paramere glabrous with_a_few_setae with_many_setae;
 {62 Left_paramere elongate shape_more_conchoid;
 {63 Left_paramere_apex sclerotized membranous;
 {64 Right_paramere with_2_apical_setae with_a_row_of_ventral_setae
 with_two_rows_of_ventral_setae;
 {65 Sclerites_X_and_Y present absent;
 {66 Ramus absent present;
 {67 Gonocoxite_IX two-segmented unsegmented;
 {68 Basal_gonocoxite_1_(or_basal_portion_of_fused_gonocoxites)
 apparently_glabrous, _no_elongate_setae_across_ventral_surface
 ventral_surface_covered_with_setae with_apical_border_of_macrotrichia
 with_apical_border_of_palmate_macrotrichia;
 {69 Apical_gonocoxite_(or_apical_portion_of_fused_gonocoxites)*
 without_medioventral_ensiform_macrotrichia
 with_4_mediodorsal_ensiform_macrotrichia;
 {70 Ligular_sclerite_of_female_bursa_copulatrix* absent present;
 {71 Ligular_sclerite_configuration* elongate_carina
 longitudinal_sclerotized_ridges sclerotized_plate
 cockscomb_configuration;
 {72 Bursa_copulatrix_distal_tubular_diverticulum* absent present;

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{73 Bursa_copulatrix_basal_diverticulum* absent present;
;
tread 'wha' (0(1(3(2(4(5((((((10(9(6 7 8))))(((((25 26)(23 24)))(21
22))(19 20))(14(11(12 13)))))))(40 41))(15 16(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35)))))) *
(0(1(3(2(4(5(((16(((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19
20))(14(11(12 13)))))))(40 41))(15(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35)))))) * (0(1(3(2(4(5(((15
16((((10(9(6 7 8))))(14(11(12 13)))((((25 26)(23 24)))(21 22))(19
20))))(40 41))(17 18)))(37(38 39))(27 28))((36(31(29 30 32 33)))(34
35)))))) * (0(1((4(5(((16(((10(9(6 7 8))))(((((25 26)(23 24)))(21
22))(19 20))(14(11(12 13)))))))(40 41))(15(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35))))(2 3))) *
(0(1(4((5(((16(((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19
20))(14(11(12 13)))))))(40 41))(15(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35))))(2 3))) *
(0(1((5(((16(((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19
20))(14(11(12 13)))))))(40 41))(15(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35))))(4(2 3))) * (0(1((5(((15
16((((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19 20))(14(11(12
13)))))))(40 41))(17 18)))(37(38 39))(27 28))((36(31(29 30 32
33)))(34 35))))(4(2 3))) * (0(1((4(5(((15 16(((10(9(6 7
8))))(((((25 26)(23 24)))(21 22))(19 20))(14(11(12 13)))))))(40 41))(17
18)))(37(38 39))(27 28))((36(31(29 30 32 33)))(34 35))))(2 3))) *
(0(1(4((5(((15 16(((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19
20))(14(11(12 13)))))))(40 41))(17 18)))(37(38 39))(27 28))((36(31(29
30 32 33)))(34 35))))(2 3))) * (0(1((4(5((((((10(9(6 7 8))))(((((25
26)(23 24)))(21 22))(19 20))(14(11(12 13)))))))(40 41))(15 16(17
18)))(37(38 39))(27 28))((36(31(29 30 32 33)))(34 35))))(2 3))) *
(0(1(4((5((((((10(9(6 7 8))))(((((25 26)(23 24)))(21 22))(19
20))(14(11(12 13)))))))(40 41))(15 16(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35))))(2 3))) * (0(1((5((((((10(9(6
7 8))))(((((25 26)(23 24)))(21 22))(19 20))(14(11(12 13)))))))(40 41))(15
16(17 18)))(37(38 39))(27 28))((36(31(29 30 32 33)))(34 35))))(4(2
3))) * (0(1(2 3 4(5(((15 16(((10(9(6 7 8))))(((((25 26)(23 24)))(21
22))(19 20))(14(11(12 13)))))))(40 41))(17 18)))(37(38 39))(27
28))((36(31(29 30 32 33)))(34 35))))))
;

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