**Morphological character descriptions and states**

Uninformative characters are indicated by U.

*Cuticle ornamentation*

1. Non granular cuticular surfaces of mesosoma, metasoma, prosoma, legs and pedipalp, punctation: present (0); absent (1).

*Carapace*

2. Anterior furcated suture/sulci: present, distinct (0); vestigial or absent (1).

3. Median ocelli: present (0); absent (1) [U].

4. Median occular tubercule, width relative to carapace width: small (ca. 1/9) (0) ; intermediate (ca 1/7) (1); large (ca. 1/5)[additive].

5. Lateral ocelli, number of pairs: two (0); three (1).

6. Lateral ocelli, development: well developed (0); extremely reduced, vestigial (1) [U].

7. Lateral ocelli, interocular distance: second ocellus adjacent to first ocellus, separated to second ocelli (0); second ocellus adjacent to third ocellus, separated from first ocellus (1); ocellus equidistant and separated from one another (2); ocelli equidistant and adjacent to one another (3); inapplicable (-).

8. Median ocular tubercle, elevation: at least slightly elevated (0); flat (1).

*Pedipalp carinae*

9. Femur, internodorsal carina: vestigial, comprising three or four large spiniform granules (0); vestigial, comprising two large spiniform granules (1); absent, without granules or comprising single spiniform granule proximally (2) [additive].

10. Femur, internomedian carina: vestigial, comprising three or four large spiniform granules (0); vestigial, comprising large spiniform granules proximally and medially (1); absent, without spiniform granules or vestigial, comprising a single spiniform granule proximally (2) [additive].

11. Femur, internomedian carinae: oriented parallel to dorsointernal and ventrointernal carinae (0); oriented diagonally across from ventrointernal carinae to dorsointernal carina (1).

12. Femur, ventroexternal carina: absent or obsolete (0); partial, only expressed proximally (1); present (2) [U, additive].

13. Patella, prolateral process: prolateral dorsal and prolateral ventral spiniform processes equally developed and fused medially (0); prolateral dorsal spiniform process reduced, prolateral ventral spiniform process reduced to absent, processes not fused medially (1).

14. Patella, prolateral process, development: strong (0); weak (1).

15. Patella, prolateral process, angle of proximal margin relative to longitudinal axis of patella (♂): less than 90°, usually about 45° (0); 90° or more (1).

16. Patella, prolateral process, angle of proximal margin relative to longitudinal axis of patella (♀): less than 90°, usually about 45° (0); perpendicular or nearly so (1)

17. Patella, prolateral process, prolateral dorsal and prolateral ventral spiniform processes: distinct, not forming a large spiniform granule medially (0); forming a single large spiniform granule (1).

18. Patella, dorsoexternal carina: distinct, comprising at least a low ridge or granular row (0); absent or obsolete (1).

19. Patella, dorsoexternal carina: smooth or nearly so (0); costate-granular or granular (1) [U].

20. Patella, externomedian carina: granular or costate (0); absent or obsolete (1).

21. Patella, ventroexternal carina: absent, vestigial or expressed in distal half only (0); present and distinct along most of length (may not be expressed at proximal and distal extremities) (1).

22. Chela manus, digital carina: distinct (0); absent or obsolete (1) [U].

23. Chela manus, ventroexternal carina: costate (0); costate-granular (1); granular or crenulate (2) [additive].

24. Chela manus, ventrointernal carina: absent or obsolete (0); present, at least as a low ridge or granular row (1).

25. Chela manus, internomedian carina: present, granular (at least sparsely) (0); absent or obsolete (1).

*Pedipalp cuticle ornamentation*

26. Femur, dorsal intercarinal surface, macrosculpture: entirely smooth or granular along proximal and retrolateral edges only (0); entirely granular except distally (1).

27. Femur, ventral intercarinal surface, macrosculpture: entirely smooth or granular at retrolateral edge only (0); granular proximally, smooth distally or at distal extremity only (1).

28. Patella, dorsal intercarinal surface, macrosculpture: entirely smooth or weakly granular along prolateral and proximal edges only (0); entirely granular, or at least comprising a reticulated network of granules (1).

29. Patella, ventral intercarinal surface, macrosculpture: entirely smooth (0); entirely granular, or at least comprising a reticulated network of granules (1).

30. Patella, retrolateral dorsal intercarinal surface, macrosculpture: entirely smooth (0); at least sparsely granular (1).

31. Patella, retrolateral ventral intercarinal surface, macrosculpture: entirely smooth (0); at least sparsely granular (1).

32. Chela, dorsal intercarinal surface, macrosculpture: entirely smooth (0); granular along prolateral and retrolateral edges only, smooth medially (1); entirely granular (2) [additive].

33. Chela, dorsal intercarinal surface, macrosculpture: granulation vestigial, comprising at most low granules (0); distinct spiniform granules (1); network of ridges and dimples (reticulation) (2) [additive].

34. Chela, ventral intercarinal surface, macrosculpture: entirely smooth (0); granular along prolateral and retrolateral edges only, smooth medially (1); entirely granular (2) [additive].

35. Chela, retrolateral intercarinal surface, macrosculpture: entirely granular (0); entirely smooth or with only a few scattered granules (1). (P01/55, 56, PCW03/33, 34)

36. Chela, prolateral ventral intercarinal surface, macrosculpture: entirely smooth (0); granular at least along prolateral edge (1).

37. Chela, fixed finger, dorsal surface, circumtrichobothrial depressions, trichobothria *db*, *dsb* and *dst*: indistinct, adjacent surfaces smooth (0); distinct, adjacent surfaces granular (at least proximally) (1).

38. Chela, fixed finger, dorsal surface, circumtrichobothrial depressions, trichobothria *dst*, *dsb* and *db*: a single confluent depression around all three trichobothria (0); three separate depressions, one around each trichobothrium (1).

*Pedipalp chela fingers*

39. Chela, movable finger, dentition, median denticle row with several larger denticles: present (0); absent (1).

40. Chela, fixed and movable fingers, denticle row: even distally, without enlarged granules (0); uneven, with additional enlarged granules (lobes) distally (1).

41. Chela, movable finger, basal lobe and corresponding notch in fixed finger (♂): absent or at most comprising two or three small spiniform granules (0); low hump comprising two or three larger conical teeth (1); pronounced (2) [additive].

42. Chela, movable finger, basal lobe, shape (♂): gently rounded dorsally and without sharp conical tooth (0); unevenly pointed dorsally, due to a sharp conical tooth (1) [U].

43. Chela, movable finger, suprabasal lobe (♂): well-developed (if dentate margin markedly scalloped, first lobe disproportionately developed) (0); weakly developed, broad low hump extending from base to mid-finger (1); absent, margin straight or nearly so, at most comprising a low hump at base of finger (2) [additive].

44. Chela, movable finger, suprabasal lobe, shape (♂): gently rounded dorsally, without sharp conical tooth (0); unevenly pointed dorsally, due to sharp conical tooth, or at least with larger tooth (1).

45. Chela, movable finger, suprabasal lobe, shape (♂): rounded, wider than high (0); conical, as high as or higher than wide (1).

46. Chela, fixed finger, suprabasal notch (♂): distinct, deep (0); distinct, shallow (1); absent (2) [additive].

47. Chela, movable finger, suprabasal lobe, alignment relative to fixed finger retrolateral surface when fingers closed (♂): aligned, not overlapping retrolateral surface (0); overlapping retrolateral surface, distal to notch (1) [U].

48. Chela, fixed and movable fingers, suprabasal notch and lobe connectivity when fingers closed (♂): contiguous or at most with a small gap, distal to lobe (0); discontiguous, with distinct gap, proximal to lobe (1); discontiguous, with distinct gap, distal and dorsal to lobe (2).

49. Chela, movable finger, basal lobe and corresponding notch in fixed finger (♀): absent (0); present (1).

50. Chela, movable finger, basal lobe, shape (♀): gently rounded dorsally and without sharp conical tooth (0); unevenly pointed dorsally, due to a sharp conical tooth (1) [U].

51. Chela, movable finger, suprabasal lobe (♀): well developed, situated almost midway along finger (0); weakly developed, long low hump in proximal half of finger (1); absent or at most weakly developed, situated close to base of finger (2) [additive].

52. Chela, fixed finger, suprabasal notch (♀): deep (0); shallow (1); absent (2) [additive].

53. Chela, fixed finger, small basal process extending from base of fixed finger onto distal part of retrolateral surface of manus, partially covering membrane between manus and movable finger (♂): present (0); absent (1) [U].

54. Chela, fixed finger, basal lobe (♂): absent or weakly developed (0); present and pronounced (1).

55. Chela, fixed finger, basal lobe, shape (♂): low, reduced (0); conical, pronounced (1).

56. Chela, fixed finger, basal lobe, with three or four conical teeth (♂): absent (0); present (1) [U].

57. Chela, fixed finger, basal lobe (♀): absent (0); present, at least weakly developed (1).

*Pedipalp trichobothria*

58. Patella, dorsal surface, *d*2 position: distal to patellar process (0); in proximal half of segment (aligned with patellar process) (1).

59. Patella, retrolateral surface, *esb* series, number of trichobothria: two (no accessory) (0); three (one accessory, between *esb* and *em* series) (1); three (one accessory, between *eb* and *esb* series) (2) [U].

60. Patella, retrolateral surface, *em*–*esb* series, arrangement: *esb*1–2 separated from *em*1–2 (0); *esb*1–2 adjacent to *em*1–2 or *esb*2 separated from *em*1–2/*esb*1 (1).

61. Patella, retrolateral surface, *eb* series, arrangement: *eb*1 separated from *eb*2–5 or *eb*1/eb4–5 separated from *eb*2–3 (0); *eb*1 and *eb*3 separated from each other and from *eb*2/*eb*4–5 (1) [U].

62. Patella, ventral surface, *v* series, number of trichobothria: three (no accessory) (0); five (two accessory) (1) [U].

63. Chela manus, dorsal surface, *Dt* position: proximal half of manus (0); distal half of manus (1); proximal on fixed finger (2) [additive].

64. Chela manus, dorsal surface, *Dt* position: at or slightly proximal to midsegment (0); in proximal third (1).

65. Chela manus, ventral surface, *V* series, number of trichobothria: four (0); five (three distal, two proximal) (1) [U].

66. Chela manus, ventral surface, *V*3 position: close to *V*4, in proximal part of manus (0); separated from *V*4 ca. 1/3 length of manus to midsegment (1).

67. Chela manus, retrolateral surface, *Esb* position: proximal to *Eb* series (0); proximal, aligned with *Eb* series (1); distal to *Eb* series, midway between *Eb* series and *Est* (2); distal to *Eb* series, close, and sometimes slightly distal to *Est* (3) [additive].

68. Chela manus, retrolateral surface, *Eb*3 position: close to *Eb*1–2 (0); distal to *Eb*1–2 (1) [U].

69. Chela manus, retrolateral surface, *Est* position: distal (0); at or near midsegment (1).

70. Chela, fixed finger, *db* position: dorsal surface (0); prolateral surface (1).

*Legs*

71. Telotarsi, pro- and retrolateral rows of macrosetae (excluding distal pair), type: stout spiniform (0); slender spiniform (1); sparse secondarily setiform (2); dense secondarily setiform (3) [additive].

72. Telotarsi I–IV, distal macrosetae of pro- and retrolateral rows, type: spiniform (0); setiform (1) [U].

73. Telotarsi I–IV, distal setiform macrosetae of pro- and retrolateral rows, number of pairs: one (0); two (1).

74. Telotarsi, well-developed ventromedian row of spinules: present (0); absent or vestigial (1).

75. Telotarsi, basal spinules: present (at least one, usually a short row) (0); absent (1).

76. Telotarsi, terminal ventromedian spinules: present, single median spinule (0); present, pair of submedian spinules (1); present, bundle of several spinules (2); absent (3).

*Genital operculum*

77. Genital opercular sclerites, median suture (♀): sclerites completely fused, suture absent (0); sclerites partly fused, suture present (1).

78. Genital operculum, posterior notch (♀): absent (0); present, at least weakly developed (1).

79. Genital operculum, shape (♀): subpentagonal to pentagonal (0); oval to semi-oval (1).

80. Genital operculum, shape (♀): as wide as or wider than long (0); longer than wide (1).

*Pectines*

81. Pecten length, expressed relative to length of leg IV coxa (♂): long, distal edge reaching beyond distal edge of coxa (0); moderate, distal edge reaching to, but not beyond, distal edge of coxa (1); short, distal edge not reaching to distal edge of coxa (2) [additive].

82. Pecten length, expressed relative to length of leg IV coxa (♀): long, distal edge reaching beyond distal edge of coxa (0); moderate, distal edge reaching to, but not beyond, distal edge of coxa (1); short, distal edge not reaching to distal edge of coxa (2) [U, additive].

83. Pectines, number of marginal lamellae: three (0); two (1).

84. Pectinal teeth, shape and distribution of peg sensillae on ventral surface (♂): short, sensillae covering distal portion of surface only (0); long, sensillae covering entire surface (1).

85. Pectinal teeth, shape and distribution of peg sensillae on ventral surface (♀): short, sensillae covering distal portion of surface only (0); long, sensillae covering entire surface (1) [U].

*Mesosomal tergites*

86. Tergites I–VII, pretergites, posterior margin, macrosculpture (♂): smooth (0); crenulate or with small spiniform granules (1).

87. Tergites I–VI, lateral transverse sulcus: absent or vestigial (extremely shallow) (0); present (1).

*Stigmata*

88. Stigma (spiracle), shape: slit-like (straight) (0); crescentic (distinctly curved on one side only) (1); round or oval (2).

89. Stigma (spiracle), length: short, less than third of sternite width (0); long, at least third of sternite width (1).

*Metasoma*

90. Segments I–IV, lateral compression: present, height greater than length (0); absent, height similar to or slightly greater than length (1).

91. Anal arch, anterior carina: crenulate, comprising at least several reduced teeth (0); comprising several large conical teeth (1).

92. Segments I–IV, median furrow: shallow, weak to absent or visible on segments I–III only (0); deep, distinct on at least segments I–IV, sometimes on V (1).

93. Metasoma, segment I, proportions: width and height equal, or height greater than width (0); wider than high (flatten dorso ventrally) (1).

94. Metasoma, segment I, ventrolateral carinae: oriented parallel to segment longitudinal axis (0); converging distally (1).

95. Metasoma, segment I, ventrosubmedian carinae: parallel to segment longitudinal axis, distinctly double (0); converging distally, fused into single carina in distal half (1).

96. Segment I, dorsosubmedian carinae, posterior spiniform granules: weak to absent, not noticeably larger than preceding granules (0); moderate to strong, distinctly larger than preceding granules (1) [U].

97. Segment I, dorsomedian posterior spiniform granules: small to absent, not noticeably larger than preceding granules (0); present, strongly developed (1) [U].

98. Segment II, dorsosubmedian carinae, posterior spiniform granules: small to absent, not noticeably larger than preceding granules (0); moderate to pronounced, distinctly larger than preceding granules (1).

99. Segment III, dorsosubmedian carinae, posterior spiniform granules: small to absent, not noticeably larger than preceding granules (0); moderate to pronounced, distinctly larger than preceding granules (1).

100. Segment IV, dorsosubmedian carinae, posterior spiniform granules: small to absent, not noticeably larger than preceding granules (0); moderate to pronounced, distinctly larger than preceding granules (1).

101. Segment I, ventrosubmedian carinae, posterior spiniform granules: weak to absent (0); 1-2 pairs, small (1); 1-2 pairs, moderate to strong (2). [additive] (Characters 98 and 99 from Prendini & Monod [5] merged, state one added)

102. Segment I, ventrosubmedian carinae, medial granules: small to absent (0); 1–3 pairs, pronounced (1).

103. Segment II, ventrolateral carinae, posterior spiniform granules: absent (0); pronounced (1).

104. Segment II, ventrolateral carinae, subposterior granules: absent (0); small (1).

105. Segment II, ventrosubmedian carinae, posterior spiniform granules: absent (0); 1–3 pairs, pronounced (1).

106. Segment II, ventrosubmedian carinae, subposterior spiniform granules: absent (0); 1–3 pairs, small (1); 1 pair, pronounced (2) [additive].

107. Segment II, ventrosubmedian carinae, medial spiniform granules: absent (0); one or two pairs, small (1); 1–3 pairs, pronounced (2) [additive].

108. Segment III, ventrosubmedian carinae, subposterior spiniform granules: absent (0); one pair, pronounced (1).

109. Segment III, ventrosubmedian carinae, medial spiniform granules: absent (0); one pair, small (1) [U].

110. Segment V, dorsolateral carinae: present, distinct (0); absent or obsolete (1).

111. Segment V, ventromedian carina: present, distinct (0); absent or obsolete, expressed only anteriorly (1).

112. Segment V, ventromedian carina: single (0); double (1) [U].

113. Segment V, ventromedian carina, distal portion: straight (0); bifurcating (1).

114. Segment V, ventral surface, smooth, shiny depression in posterior half between ventrolateral carinae: absent (0); present (1).

115. Segment V, ventrolateral carinae: present, distinct (0); absent or obsolete (1) [U].

116. Segment V, ventrolateral carinae, posterior half: at least comprising small spiniform granules (0); smooth, rarely with one pair of vestigial granules posteriorly (1).

117. Segment V, ventrolateral carinae, posterior half, spiniform granules: strong conical tooth-like granules (0); medium spiniform granules more pronounced than granules in anterior half (1); small spiniform granules, not noticeably larger than granules in anterior half (2) [additive].

*Telson*

118. Telson, length compared to metasomal segment V, length: less than (0); similar to or slightly greater than (1).

119. Telson, vesicle, surface macrosculpture: two or more longitudinal rows of granules on all or part of ventral surface only (0); smooth, without granules (1) [U].

*Hemispermatophore*

120. Distal lamina, shape: straight or nearly so (0); at least slightly curved (1).

121. Distal lamina, ental edge, distal crest: present (0); absent (1).

122. Distal lamina, distal and basal parts, relative lengths: distal part distinctly longer than basal part (0); distal part similar to or slightly longer than basal part (1).

123. Laminar hook, position on distal lamina: proximal third of distal lamina (0); subdistal, approximately midway or slightly less than midway along lamina (1); midway to distal third of lamina (2) [additive].

124. Distal lamina, ental edge, basal extrusion: present (0); absent (1).

125. Transverse ridge: present and distinct (0); weak or absent (1).

126. Transverse ridge, fusion point with ental edge, relative to base of laminar hook: fusion proximal to base of hook (0); fusion with base of hook (1); fusion distal to base of hook (2) [additive].

127. Transverse ridge, position relative to laminar hook: ridge markedly proximal to base of hook (0); ridge sightly proximal to base of hook (1); ridge approximately aligned with base of hook (2) [additive].

128. Capsule, lamella, shape: narrow, elongated and pointed, apex narrower than base, folded longitudinally on both sides, forming narrow groove (0); broad, only folded proximally, forming wide groove, and unfolded into broad lobe distally (1); broad, apex not markedly narrower than base, folded longitudinally on both sides forming groove (2); broad basally, forming wide groove, ental edge folded distally, tip much narrower than base (3); narrow, only folded proximally and unfolded to flattened distal extremity, with apex and base similar in width (4).

129. Capsule, lamella, longitudinal carina on dorsal surface: present (0); absent to weak (1).

130. Capsule, lamella, accessory hook on distal part of dorsal surface, oriented toward basal part: present (0); absent (simple lamella) (1).

131. Capsule, accessory lobe on basal part of ectal surface of lamella: present (0); absent (simple lamella) (1).

132. Capsule, apex of lamella, position relative to laminar hook: proximal to base of hook (0); aligned with base of hook (1); aligned with apex of hook (2) [additive].

133. Capsule, apex of lamella, position relative to apex of distal lobe: proximal to or aligned with apex of distal lobe (0); distal to apex of distal lobe (1).

134. Capsule, distal lobe: well developed, finger-like projection (0); moderately developed hump (1); absent or weakly developed hump (2).

135. Capsule, distal lobe, shape: hook-like (0); dome-shaped (1).

136. Capsule, distal lobe, accessory hook on ental surface: absent (0); present (1).

137. Capsule, basal lobe: well developed, spoon-shaped, merging with ental accessory lobe (0); weak to absent (1).

138. Capsule, ectal edge of basal lobe, angle formed with lamella: 90º (0); 135–150º (1).

139. Capsule, ental edge of basal lobe, angle formed with lamella: 90º (0); in same plane as lamella (1).

140. Capsule, ental edge of basal lobe, accessory fold toward ectal part: present (0); absent (1).

141. Capsule, ectal edge of basal lobe, accessory distal fold, forming a median groove: present (0); absent (1) [U].