

## **S1. Character list**

0. Rostrum as unarmed crest: absent = 0; present = 1.
1. Rostrum, dorsal teeth subuliform and spaced from each other: absent = 0;  
present = 1.
2. Rostrum, dorsal subuliform both on rostrum and carapace extending from the dorsal ridge:  
absent = 0; present = 1.
3. Rostrum, dorsal subuliform teeth only on rostrum: absent = 0; present = 1.
4. Rostrum, dorsal teeth subtriangular and extending from a common crest:  
absent = 0; present = 1.
5. Carapace in cross-section: suboval = 0; subtriangular = 1.
6. Reticulum of carinae on membranous carapace: absent = 0; present = 1.
7. Sharp branchiostegal carina: absent = 0; present = 1.
8. Carapace, a long branchiostegal carina 0.7-1.0 of carapace length:  
absent = 0; present = 1.
9. Hepatic spine in unusual anterior position: absent = 0; present = 1.
10. Carapace, entire postorbital carina, extending from rostrum to posterior of orbit:  
absent = 0; present = 1.
11. Carapace, a net of sharp reinforcing lateral carinae along whole length:  
absent = 0; present = 1.
12. Carapace, sharp reinforcing lateral carinae along ventral margin:  
absent = 0; present = 1.
13. Carapace, oblique transverse carina ventral of postorbital carina:  
absent = 0; present = 1.
14. Carapace, suprabranchial ridge: inconspicuous = 0; well-developed = 1.
15. Carapace, very strong infrabranchial ridge: absent = 0; present = 1.
16. Carapace, a single sharp tooth on posterior margin: absent = 0; present = 1.
17. Carapace, a barb on posterior margin: absent = 0; present = 1.
18. Carapace, posteroventral margin: unarmed = 0; with sharp tooth = 1.
19. Carapace, postorbital carina from orbit to posterior margin of carapace:  
absent = 0; present = 1.
20. Carapace, postorbital ridge from orbit to posterior margin of carapace:  
absent = 0; present = 1.

21. Carapace, lateral sinus extending from orbit to posterior margin:  
absent = 0; present = 1.
22. Carapace, additional lateral carina on posterior part, parallel to postorbital carina:  
absent = 0; present = 1.
23. Carapace, long (1/2 or more of carapace length) dorsal carina: absent = 0;  
present = 1.
24. Carapace, additional lateral carina along entire carapace length between branchiostegal carina and ventral margin of carapace:  
absent = 0; present = 1.
25. First abdominal somite, anterior margin: smooth = 0;  
armed with a barb or tooth = 1.
26. First abdominal somite, a single sharp tooth on anterior margin:  
absent = 0; present = 1.
27. First abdominal somite, dorsal carina: absent = 0; present = 1.
28. Second abdominal somite, dorsal carina: absent = 0; present = 1.
29. Second abdominal somite, strong posteromesial tooth: absent = 0;  
present = 1.
30. Third abdominal somite, blunt dorsal carina: absent = 0; present = 1.
31. Third abdominal somite: dorsally convex = 0; dorsally sulcate/flattened = 1.
32. Third abdominal somite, very strong and long posteromesial tooth:  
absent = 0; present = 1.
33. Third abdominal somite, very narrow and long posteromesial tooth:  
absent = 0; present = 1.
34. Fourth abdominal somite, strong mesial tooth on posterior margin:  
absent = 0; present = 1.
35. Fourth abdominal somite, a single spinule on lateral margin: absent = 0;  
present = 1.
36. Fifth abdominal somite, strong mesial tooth on posterior margin:  
absent = 0; present = 1.
37. Fifth abdominal somite, spinules on lateral margin: absent = 0; present = 1.
38. Sixth abdominal somite: not shortened, longer than fifth somite = 0;  
shortened, nearly as long as fifth somite = 1.

39. Telson, spinose endpiece (type *Oplophorus-Systellaspis*): absent = 0;  
present = 1.
40. Telson, spinose endpiece (type *H. acanthitelsonis*): absent = 0; present = 1.
41. Telson, dorsal ridge: absent = 0; present = 1.
42. Telson, dorsal sulcus along at least 1/3 of length: absent = 0; present = 1.
43. Telson, apex armed with 2 pairs of short movable spines: absent = 0;  
present = 1.
44. Scaphocerite, lateral margin: smooth = 0; serrate = 1.
45. Mandible, molar process: developed = 0; reduced = 1.
46. Mandible, left molar process compressed, sub-bilinear: absent = 0;  
present = 1.
47. Mandible, molar process consisting of rather deep channel flanked by thin walls opposing similar structure on other member:  
absent = 0; present = 1.
48. Mandibles, incisor process subtriangular, molar process without deep channel:  
absent = 0; present = 1.
49. Mandible, incisor process subtriangular, with enlarged teeth: absent = 0;  
present = 1.
50. Mandible, subtriangle incisor process dentate along entire margin:  
absent = 0; present = 1.
51. Mandible, subtriangle incisor process dentate along proximal margin, plus a single distal tooth on distal margin:  
absent = 0; present = 1.
52. Second maxilla, proximal endite bearing well-developed submarginal papilla:  
absent = 0; present = 1.
53. Second maxilla, proximal endite bearing well-developed submarginal lamina:  
absent = 0; present = 1.
54. Second maxilla, proximal endite bearing reduced submarginal papilla:  
absent = 0; present = 1.
55. Second maxilla, proximal endite bearing reduced submarginal lamina:  
absent = 0; present = 1.
56. Second maxilla, proximal endite elongate, without submarginal papilla and lamina:

absent = 0; present = 1.

57. First maxilliped, endopod 3-segmented, with short basal and terminal segments:

absent = 0; present = 1.

58. First maxilliped, endopod 2-segmented, greatly overreaching endites (2 terminal segments fused):

absent = 0; present = 1.

59. First maxilliped, endopod 2-segmented, slightly overreaching endites (3rd terminal segment lost):

absent = 0; present = 1.

60. Second maxilliped, subtriangular terminal segment attached to penultimate segment transversely:

absent = 0; present = 1.

61. Second maxilliped, terminal segment bearing few robust terminal setae:

absent = 0; present = 1.

62. Second maxilliped, subovoid terminal segment attached transversely:

absent = 0; present = 1.

63. Second maxilliped, subtriangular terminal segment attached diagonally:

absent = 0; present = 1.

64. Second maxilliped, subovoid terminal segment attached diagonally:

absent = 0; present = 1.

65. Third maxilliped, developed and greatly compressed exopod: absent = 0;  
present = 1.

66. Third maxilliped, well developed and rigid exopod: absent = 0; present = 1.

67. First pereopod, developed and greatly compressed exopod: absent = 0;  
present = 1.

68. First pereopod, well developed and rigid exopod: absent = 0; present = 1.

69. First pereopod, merus greatly compressed and expanded: absent = 0;  
present = 1.

70. First pereopod, ischium greatly compressed and expanded: absent = 0;  
present = 1.

71. Second pereopod, merus greatly compressed and expanded: absent = 0;  
present = 1.

72. Second pereopod, ischium greatly compressed and expanded: absent = 0;

present = 1.

73. Third pereopod, merus greatly compressed and expanded: absent = 0;

present = 1.

74. Third pereopod, ischium greatly compressed and expanded: absent = 0;

present = 1.

75. Third pereopod, ishium: unarmed = 0; armed with movable spines = 1.

76. Epipods well-developed on pereopods 1-3 only: absent = 0; present = 1.

77. Epipods well-developed on pereopods 1-4: absent = 0; present = 1.

78. Fifth pereopod, dactyl: short = 0; elongate = 1.

79. Fifth pereopod, dactyl forming chelate structure: absent = 0; present = 1.

80. Fifth pereopod, dactyl: elongate = 0; shortened = 1.