Supplementary Table 1

FOSSIL ARTHROPODS	Mode	Alternative phylogenetic position	References	Notes
stem Arthropoda				
Trilobita	H	stem Chelicerata or stem Mandibulata	2, 6	1
Fuxianhuiida	H		7, 8	2
Isoxys auritus	H		9	
stem Chelicerata				
Leanchoilia illecebrosa	H	stem Arthropoda	10	
stem Pycnogonida				
Cambropycnogon klausmuelleri	A		11	
stem Mandibulata				
Phosphatocopina	A	stem Pancrustacea	12	3
Aquilonifer spinosus	A		13	
crown Pancrustacea				
Rehbachiella kinnekullensis	A		12, 14	4

EXTANT ARTHROPODS	Mode	nH	nA	References	Notes
Chelicerata					
Pycnogonida (plesiomorphic condition)	H	4	8	15, 16, 17	5, 6
Pycnogonida (apomorphic condition)	Ep	8	8	15, 16, 17, 18	5, 6
Xiphosura	Ep	17	17	15, 16, 19	
Parasitiformes	Ep	20	20	15, 16, 19	7, 8
Acariformes (plesiomorphic condition)	H	14-16	17	15, 16, 19	7, 8
Acariformes (apomorphic condition)	Ep	14	14	15, 16, 19	7
Palpigradi	Ep	18	18	15, 16, 19	
Opiliones	Ep	17	17	15, 16, 19	9
Solifugae	Ep	18	18	15, 16, 19	10
Ricinulei	Ep	17	17	15, 16, 19	11
Pseudoscorpiones	Ep	19	19	15, 16, 19	12
Scorpiones	Ep	19	19	15, 16, 19	11
Pedipalpi	Ep	19	19	15, 16, 19	13
Araneae	Ep	19	19	15, 16, 19	14, 15
Myriapoda					
Scutigeromorpha	H	13	24	15, 19, 20, 21	16, 17
Craterostigmomorpha	H	21	24	15, 19, 20, 21	16, 17
Lithobiomorpha	H	16	24	15, 19, 20, 21	16
Scolopendromorpha	Ep	30-52	30-52	15, 19, 20, 21	16, 18, 19
Geophilomorpha	Ep	36-200	36-200	15, 19, 20, 21	16, 17, 20, 21, 22
Symphyla	H	13-14	20	15, 19, 20, 21	17, 23
Pauropoda	H	11	18	15, 19, 20, 21	17, 24
Polyxenida	H	10	20-24	15, 19, 22	17, 25, 26
Sphaerotheriida	H	10	28-30	15, 19, 22	17, 26, 27
Glomeridesmida	H	10	42-43	15, 19, 22	17, 26, 27
Glomerida	H	10	24-26	15, 19, 22	17, 26, 27
Siphoniulida	Eu	10	86	22	17, 26, 28, 29
Platydesmida	Eu	11	72-222	15, 19, 22	17, 26, 30, 31
Siphonocryptida	Eu	11	58-106	22	17, 25, 26, 32
Siphonophorida	Eu	11	74-386	15, 19, 22	17, 25, 26
Polyzoniida	Eu	11	42-172	15, 19, 22	17, 25, 26, 33
Chordeumatida	T	10	52-64	15, 19, 22	17, 26, 30
Callipodida	T/Eu	10	76-128	15, 19, 22	17, 26, 30

Polydesmida	T	10	36-58	15, 19, 22	17, 26, 28
Stemmiulida	Eu	10	72-110	15, 19, 22	17, 26, 30, 34
Spirobolida	H/Eu	10	63-157	15, 19, 22	17, 26, 35, 36
Spirostreptida	H/Eu	10	38-188	15, 19, 22	17, 26, 35
Julida	Eu	10	50-204	15, 19, 22	17, 26, 28, 37
Pancrustacea					
Ostracoda	H	4-6	13-17	19, 23, 24	38
Branchiura (incl. Pentastomida)	Ep	10	10	19, 23, 24	39, 40
Mystacocarida	H	9	16	12, 19, 23, 24	40, 41
Leptostraca	Ep	22	22	12, 19, 23, 24	42
Stomatopoda	Ep	21	21	12, 19, 23, 24	40
Peracarida	Ep	21-22	21-22	12, 19, 23, 24, 25	43, 44
Bathynellacea	H	17	21	19, 23, 24	40
Anaspidacea	Ep	21	21	12, 19, 23, 24	
Euphausiacea	H	4	21	12, 19, 23, 24	40
Dendrobranchiata	H	4	21	12, 19, 23, 24	40
Pleocyemata	Ep	21	21	12, 19, 23, 24	45
Copepoda	T	4	16	12, 19, 23, 24	40, 46
Thecostraca (incl. Tantulocarida)	H	4	12-17	12, 19, 23, 24	40, 47
Cephalocarida	H	8-11	25	12, 15, 19, 23, 24	40, 41
Anostraca	H	4	25-33	12, 19, 23, 24	40, 48
Notostraca	H	9	31-50	12, 19, 23, 24	40, 49
Laevicaudata	H	4	16-18	12, 19, 23, 24	40
Spinicaudata	H	4	22-38	12, 19, 23, 24	40
Cyclestherida	H	4	21-22	12, 19, 23, 24	40
Cladocera	Ep	unc.	unc.	12, 19, 23, 24, 26	50, 51
Remipedia	Eu	8	22-49	12, 19, 27	40
Protura	H	17	20	15, 19, 28	52
Collembola	Ep	15	15	15, 19, 28	53
Diplura	Ep	19	19	15, 19, 28	54
Insecta	Ep	18-20	18-20	15, 19, 28	54, 55, 56, 57

For extinct taxa, taxonomic arrangements based on Ref. [1]. For extant taxa, taxonomic arrangement based on Refs. [2] (Arthropoda), [3] (Chelicerata), [4] (Myriapoda), [5] (Branchiopoda and Malacostraca). See Figure 1 in the text for phylogenetic relationships.

Legend. Mode: mode of development; A, anamorphosis, mode not better specified; Ep, epimorphosis; Eu, euanamorphosis; H, hemianamorphosis; T, teloanamorphosis; nH: number of body segments at hatching; nA: number of body segments as adult. Segment numbers include the segments of the most anterior tagma (7 prosomal segments in most chelicerates, 3 gnathosomal segments in mites, 6 cephalic segments in mandibulates). Intervals include inter- and intraspecific variation and do not account for extreme conditions in some parasitic subtaxa; unc., uncertain. References mostly limited to general repertoires (references to the original works can be found therein).

Notes. Segmentation mode and number of segments should be taken with caution, as (i) authors disagree on segment number or nature in some taxa, (ii) segmental mismatch can severely invalidate the meaning of the count as given in the table, (iii) variation at lower taxonomic level can easily be overlooked, thus the data may refer to the most common or to the hypothesized plesiomorphic condition in the taxon and (iv) some taxa are inadequately known in this respect. The following list of notes is intended as a preliminary guide. Variation due to putative 'loss of articulation' between two or more contiguous segments (or sclerites) is very common among several taxa across the Arthropoda but is not accounted for here. Segment counts do not include the telson, where recognizable.

1. Possibly, an early phase of segment constancy before anamorphosis; one documented case of possible euanamorphosis

2. As a rule, fuxianhuiids develop hemianamorphically (D. A. Legg pers. comm.), however, the eponymous taxon (*Fuxianhuia protensa*), although previously described as developing this way as well [7], has been claimed to display epimorphic development, with most of previously described variation in juvenile segment numbers due to misidentification of juvenile specimens [8].
3. Several species hatching as head larva (5 segments)
4. Hatching as a nauplius (4 segments); hatching at more advanced stages in other crown-group species
5. Non-segmented opisthosoma
6. Most taxa with embryoid hatching stage (protonymphon)
7. Putative primitive segment number; actual segment number problematic for most taxa due to extensive simplification or loss of segmental structures
8. Many taxa with embryoid hatching stage (prelarva)
9. Many taxa with embryoid hatching stage (larva)
10. Embryoid hatching stage (post-embryo)
11. Embryoid hatching stage (larva).
12. Embryoid hatching stage (protonymph)
13. Embryoid hatching stage (Amblypygi: pronymph; Uropygi: larva or pronymph)
14. Putative primitive segment number; segmentation in general lost or at least segment number in the opisthosoma reduced (6–8 tergites and sternites in the opisthosoma in Mesothelae)
15. Many taxa with one or more embryoid hatching stages (pronymph or prelarva)
16. Segmental composition of post-pedal trunk uncertain; number of trunk segments estimated as #leg-bearing segments + 3 (one anterior trunk segment bearing a pair of poisonous maxillipedes (forcipular segment) and two terminal apodous segments in the ano-genital region, excluding telson
17. Dorsoventral mismatch: number of trunk segments given here based on the number of ventral segmental units
18. 21, 23, 39 or 43 leg bearing segments
19. Two embryoid juvenile stages (peripatoid and foetus)
20. 27–191 leg bearing segments, odd values only
21. Two embryoid juvenile stages (peripatoid and foetus) are usually recognized, but five embryoid stages have been described in the only species, *Strigamia maritima*, in which developmental events in the embryonic-to-postembryonic transition have been investigated carefully
22. Minimal anamorphosis (up to 3 segments out of 54-62) in the only species, *Strigamia maritima*, in which developmental events in the embryonic-to-postembryonic transition have been investigated carefully
23. Embryoid hatching stage (prelarva)
24. Embryoid hatching stage (pupoid). A prepupoid which moults to pupoid in *Gravieripus*
25. Number of trunk segments estimated as 2(# tergites) - 4 (the apodous collum and the next 3 segmental units with one leg-pair each)
26. Embryoid hatching stage (pupoid) observed in some lineages of Diplopoda but possibly present in all
27. Number of trunk segments estimated as # leg pairs - 1 (the apodous collum)
28. Number of trunk segments estimated as 2(# rings) - 4 (the apodous collum and the next 3 rings corresponding to one leg pair each)
29. Little known taxon. Mode of anamorphosis based on other Helminthomorpha. The number of segments at hatching is a guess based on the number in the closest relatives and used only to estimate percentage of segment added post-embryonically
30. Number of trunk segments estimated as 2(# pleurotergites) - 4 (the apodous collum and the next 3 pleurotergites corresponding to one leg pair each)
31. Hatching with more than four trunk segments (5 to 42) in some species
32. Little known taxon. Mode of anamorphosis based on other Colobognatha. The number of segments at hatching is a guess based on the number in the closest relatives and used only to estimate percentage of segment added post-embryonically
33. Hatching with more than four trunk segments (5) in some species
34. Hatching with more than four trunk segments (28 to 38) in some species

35. Number of trunk segments estimated as 2(# rings) - 5 (the apodous collum and the next 4 rings corresponding to one leg pair each)
36. Hatching with more than four trunk segments (21 to 22) in some species
37. Hatching with more than four trunk segments (7 to 28) in some species
38. Trunk generally non-segmented or with faint traces of segmentation; up to 11 trunk segments recognizable in Podocopa (hatching with 4 body segments), up to 7 in Myodocopa (hatching with 7 body segments)
39. Parasites, segmentation lost to different degrees
40. Larval phase/indirect development. Due to the inconsistent use of the term larva, let us precise that here we intend a juvenile stage with morphological features significantly different from the adult. These do not entail a smaller number of segments (indirect development and anamorphic development are potentially independent features) or metamorphosis
41. Segments added in sets of two
42. Embryoid hatching stage in *Nebaliopsis*
43. Some species of Lophogastrida with 7 pleonites
44. Embryoid hatching stage in some Mysidacea (nauplioid), with incomplete trunk segmentation (residual hemianamorphosis)
45. Some taxa with embryoid hatching stage (pre-zoea)
46. Primitive condition, as in most free-living species
47. Sessile or parasites as adults, segmentation lost to different degrees
48. Most species with 11 thoracic segments; in Polyartemiidae, 17 or 19
49. Dorsoventral mismatch: number of trunk segments given here based on the number of dorsal segmental units
50. Direct development, but free-swimming larval phase in *Leptodora kindtii.*
51. Anomopoda and Ctenopoda with embryoid hatching stage (pronymph) protected in the mother's brood pouch (pseudo-direct development).
52. A twelfth abdominal segment interpreted as a telson
53. Telson present only in the embryo
54. A telson present only in the embryo, or in vestigial form in some taxa
55. Fusion, reduction or loss of anterior or subterminal abdominal segments not infrequent
56. Some taxa with embryoid hatching stage (prelarva)
57. Larval phase in Holometabola

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