frontiers

Supplementary Material

The significance of *Anomalocaris* and other Radiodonta for understanding paleoecology and evolution during the Cambrian Explosion

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1 Full list of taxa included or linked to Radiodonta

Radiodonta: Liu et al. (2018) (Collins, 1996)

Amplectobeluidae: Pates et al. (2021a) (Vinther et al., 2014)

Amplectobelua: Cong et al. (2017) (Hou et al., 1995)

Amplectobelua stephenensis: Daley and Budd (2010)

Amplectobelua symbrachiata: Cong et al. (2017) (Hou et al., 1995)

Guanshancaris Zhang et al. (2023)

Guanshancaris kunmingensis: Zhang et al. (2023) (Wang et al., 2013)

Lyrarapax: Liu et al. (2018) (Cong et al., 2014)

Lyrarapax trilobus: Cong et al. (2016)

Lyrarapax unguispinus: Cong et al. (2014)

Ramskoeldia: Cong et al. (2018)

Ramskoeldia platyacantha: Cong et al. (2018)

**Ramskoeldia consimilis*: Cong et al. (2018)

Anomalocarididae: (Raymond, 1935)

Anomalocaris: Collins (1996) (Whiteaves, 1892)

Anomalocaris canadensis: Daley and Edgecombe (2014) (Whiteaves, 1892)

Lenisicaris: Wu et al. (2021b)

Lenisicaris pennsylvanica: Pates and Daley (2019) (Resser, 1929), genus reatribution in Wu et al. (2021b)

Lenisicaris lupata: Wu et al. (2021b)

Hurdiidae: Wu et al. (2022) and Moysiuk and Caron (2022) (Vinther et al., 2014)

Aegirocassis: Van Roy et al. (2015)

Aegirocassis benmoulai: Van Roy et al. (2015)

Buccaspinea: Pates et al. (2021b)

Buccaspinea cooperi: Pates et al. (2021b)

Cambroraster: Moysiuk and Caron (2019)

Cambroraster falcatus: Moysiuk and Caron (2019)

Cordaticaris: Sun et al. (2020)

Cordaticaris striatus: Sun et al. (2020)

Hurdia: Daley et al. (2013a) (Walcott, 1912)

Hurdia victoria: Daley et al. (2013a) (Walcott, 1912)

Hurdia triangulata: Daley et al. (2013a) (Walcott, 1912)

Pahvantia: Lerosey-Aubril and Pates (2018) (Robison and Richards, 1981)

Pahvantia hastata: Lerosey-Aubril and Pates (2018) (Robison and Richards, 1981)

Peytoia: Daley and Legg (2015) (Walcott, 1911)

Peytoia infercambriensis: Daley and Legg (2015) (Lendzion, 1975)

Peytoia nathorsti: Collins (1996) (Walcott, 1911), synonymised from *Laggania cambria* in Daley and Bergström (2012).

Stanleycaris: Moysiuk and Caron (2022) (Caron et al., 2010)

Stanleycaris hirpex: Moysiuk and Caron (2022) (Caron et al., 2010)

Titanokorys: Caron and Moysiuk (2021)

Titanokorys gainesi: Caron and Moysiuk (2021)

Ursulinacaris: Pates et al. (2019)

Ursulinacaris grallae: Pates et al. (2019)

**Pseudoangustidontus*: Van Roy and Tetlie (2006)

Pseudoangustidontus duplospineus: Van Roy and Tetlie (2006)

**Schinderhannes*: Kühl et al. (2009)

Schinderhannes bartelsi: Kühl et al. (2009)

Tamisiocarididae: Wu et al. (2021a) (Vinther et al., 2014), originally called Cetiocaridae

"Anomalocaris" briggsi: Daley et al. (2013b) (Nedin, 1995)

Houcaris: Wu et al. (2021a)

Houcaris saron: Wu et al. (2021a) (Hou et al., 1995)

Houcaris magnabasis: Pates et al. (2021a), genus reatribution in Wu et al. (2021a)

Tamisiocaris: Vinther et al. (2014) (Daley and Peel, 2010)

Tamisiocaris borealis: Pates and Daley (2019) (Daley and Peel, 2010)

Incertae sedis:

***Caryosyntrips*: Pates and Daley (2017) (Daley and Budd, 2010)

Caryosyntrips camurus: Pates and Daley (2017)

Caryosyntrips durus: Pates and Daley (2017)

Caryosysntrips serratus: Pates and Daley (2017) (Daley and Budd, 2010)

***Cucumericrus*: Hou et al. (1995)

Cucumericrus decoratus: Hou et al. (1995)

***Innovatiocaris*: Zeng et al. (2022)

Innovatiocaris maotianshanensis: Zeng et al. (2022)

"Innovatiocaris" multispiniformis: Zeng et al. (2022)

****Laminacaris*: Guo et al. (2019)

Laminacaris chimera: Guo et al. (2019)

****Paranomalocaris*: Jiao et al. (2021) (Wang et al., 2013)

Paranomalocaris multisegmentalis: Jiao et al. (2021) (Wang et al., 2013)

Paranomalocaris simplex: Jiao et al. (2021)

*****Parapeytoia*: Hou et al. (1995)

Parapeytoia yunnanensis: Hou et al. (1995)

*: attribution to this family is uncertain

**: likely to be a radiodont, but unclear to which family it belongs

***: probably not a radiodont, but has been described as one previously and remains closely associated to radiodonts (not included in our counts of radiodont genera and species)

2 Radiodonta terminology

Supplementary Table 1. Non-exhaustive lists of anatomical terminology applied to Radiodonta in this review as compared to previous publications.

3 Radiodonta global and temporal distribution

Supplementary Table 2. Complete list of lower Paleozoic localities from which Radiodonta are described, and the taxa found therein.

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