**Supplemental Table 3. Matrix of morphological characters analyzed in the current study. Species were coded by Harold and Weitzman (1996) generally at the genus-level, so only a single genus will be included below if invariant. All terminals in each genus were coded identically, even if the species was not examined by Harold and Weitzman (1996).**

*Diplophos* 010000010000000000000?0000010000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000

*Margrethia* 000000000000000000000?000001000000000000000000000000000000000000000000000000000000000000000000010000000000000000000000000?000000000000000000000000000

*Triplophos* 000000000000000000000?0000110000000001000000000000000000000000000000000010000000000000000000000000000011100000000000000000000000000000000000000000000

*Sigmops* 000000000000000000000?000001000000000000000000000000000000000000000000000000000000000000000000010000000000000000000000000?000000000000000000000000000

*Zaphotias* 000000000000000000000?000001000000000000000000000000000000000000000000000000000000000000000000010000000000000000000000000?000000000000000000000000000

*Araiophos* 00000000010100000000000021000000000111110011001000100001000000101100000000001101000011120000100000?0003101111??????01?000100000000111100000?000000000

*Argyripnus* 00010000010100010100000001010000000021110001111000100000100000011110000100001101021131110000110100000020101010101110111110111000011010000100000000001

*Argyropelecus* 01000101010111001211001103111110?00011001020110011111111201110000201000010110101011131110000002111101121101111112111111110100111101011111111110011110

*Danaphos* 10101010100100001000110000010000001001112111111100100001010000001100100101021101111011111000001000110020111100001010111110000000001011000000001100000

*Maurolicus* 00010000110100000000010001010000001111102011111000100001000000001100110000021111000021110002101100000020011111000000110110000000000010000000000000000

*Polyipnus* 00000100010110010211001013010100110011100021111001111111001101010211110011120110001131110101102111101011011011100010111110100111101011101100111000001

*Sonoda* 000100000101000101000011020100000000211100111110?0100001100000011100000101021101???1111100001101000000200110101011101?111111100001101?000100001100001

*Sternoptyx* 01000101011111100301?0??????1111120011001020110211112120201111100312001111110100???1111200100021111111?1111111112011112110100111101011111011001011111

*Thorophos\_euryops* 00000000000100000000010000000000000001110001001000100000000000101100000000021101000011110100100100100011111100110000110001000000000000100000000000000

*Thorophos\_nexilis* 00000000000100000000010000000000000001110001001000100000000000101100000000021101000011110100100100100011111100110000110001000000000100100000000000000

*Valenciennellus* 10101010100100000100111000010000001001112111111100100001010000001100100101021101111011121000001000100020111100001010111111000000001010000000001100000