Alignments used in the analyses divided by family groups.

01\_Eusiridae\_et\_al\_COI\_align.fasta – alignment of 131 sequences of the families Eusiridae, Leucothoidae, Liljeborgiidae, and Stilipedidae (parvorders Amphilochidira and Eusiridira) and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

02\_Phox\_COI\_align.fasta – alignment of 69 sequences of the family Phoxocephalidae and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

03\_Lysi\_Steg\_COI\_align.fasta – alignment of 65 sequences of the parvorder Lysianassidira) and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

04\_Oedi\_COI\_align.fasta – alignment of 51 sequences of the family Oedicerotidae and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

05\_Pard\_Lepe\_Melp\_COI\_align.fasta – alignment of 13 sequences of the families families Pardaliscidae, Lepechinellidae, Melphidippidae and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

06\_Ampe\_Syno\_COI\_align.fasta – alignment of 87 sequences of the families Synopiidae, Ampeliscidae and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

07\_rest\_COI\_align.fasta – alignment of 48 sequences of the families Dulichiidae, Calliopiidae, Hyperiopsidae, Unciolidae, Mirabestidae fam. nov. and unidentified taxa and outgroup (*Asellus aquaticus*) used for NJ tree construction and Median Joining Networks preparation.

08\_CCZ\_COI\_all\_align\_ASAP.fasta – alignment of all 581 sequences used for ASAP analysis.