

Description of Additional Supplementary Files

File name: Supplementary Data 1

Description: Raw coordinates (x,y,z) of the landmarks digitized in each vertebra.

File name: Supplementary Data 2

Description: Results of Procrustes ANOVAs for all pinnipeds for the cervical plus joined thoracolumbar count procedure.

File name: Supplementary Data 3

Description: Results of Procrustes ANOVAs for all pinnipeds for the thoracolumbar boundary count procedure.

File name: Supplementary Data 4

Description: Results of Procrustes ANOVAs for all pinnipeds for the diaphragmatic start count procedure.

File name: Supplementary Data 5

Description: Results of Procrustes ANOVAs for all pinnipeds for the selected vertebrae procedure.

File name: Supplementary Data 6

Description: Results (p-values) obtained from phylogenetic and non-phylogenetic 2B-PLSs for each pair of vertebrae for the cervical plus joined thoracolumbar count procedure.

File name: Supplementary Data 7

Description: Results (p-values) obtained from phylogenetic and non-phylogenetic 2B-PLSs for each pair of vertebrae for the thoracolumbar boundary count procedure.

File name: Supplementary Data 8

Description: Results (p-values) obtained from phylogenetic and non-phylogenetic 2B-PLSs for each pair of vertebrae for the diaphragmatic start count procedure.

File name: Supplementary Data 9

Description: Results (p-values) obtained from phylogenetic and non-phylogenetic 2B-PLSs for each pair of vertebrae for the selected vertebrae procedure.

File name: Supplementary Data 10

Description: Results of Procrustes ANOVAs for phocids for the cervical plus joined thoracolumbar count procedure.

File name: Supplementary Data 11

Description: Results of Procrustes ANOVAs for phocids for the thoracolumbar boundary count procedure.

File name: Supplementary Data 12

Description: Results of Procrustes ANOVAs for phocids for the diaphragmatic start count procedure.

File name: Supplementary Data 13

Description: Results of Procrustes ANOVAs for phocids for the selected vertebrae procedure.

File name: Supplementary Data 14

Description: Results of Procrustes ANOVAs for otariids for the cervical plus joined thoracolumbar count procedure.

File name: Supplementary Data 15

Description: Results of Procrustes ANOVAs for otariids for the thoracolumbar boundary count procedure.

File name: Supplementary Data 16

Description: Results of Procrustes ANOVAs for otariids for the diaphragmatic start count procedure.

File name: Supplementary Data 17

Description: Results of Procrustes ANOVAs for otariids for the selected vertebrae procedure.

File name: Supplementary Data 18

Description: Pinniped Zscore values using the same landmark as in fissipeds [16].

File name: Supplementary Data 19

Description: Parameters and data acquisition of the study samples.

File name: Supplementary Data 20

Description: Surface areas of epaxial muscles (in mm²) for each slice corresponding to each vertebra, from C1 to L5.

File name: Supplementary Data 21

Description: Surface areas of hypaxial muscles (in mm²) for each slice corresponding to each vertebra, from C1 to L5.

File name: Supplementary Data 22

Description: Ratio values from dividing the Epaxial with Hypaxial area for each slice corresponding to each vertebra, from C1 to L5.