

Captions for Supplementary Figures:

Figure S1

File name: fS01_Morphometrics.png

Schematic illustration of the morphometric measurements used to quantify body size (mm) across different taxa. Measurements were taken using species-specific anatomical features, as indicated by arrows: carapace length (a–b; e.g., *Colossendeis* sp., *Lithodes* sp.), body diameter (c–e; e.g., *Polymastia* sp., *Geodia* sp., *Strongylocentrotus* sp.), disk diameter (f–g; Ophiuroidea), outer diameter (h–j; e.g., *Henricia* sp., *Pteraster* sp., *Crossaster* sp.), and body length (k–n; e.g., Caprellidae, Aglaopheniidae, *Aegiochus* sp., *Hornera* sp.).

Figure S2

File name: fS02_samples/station.png

Abundance of individuals (n) per family across sampling stations. Only families with ≥ 10 individuals are shown (°), while vulnerable marine ecosystem (VME) taxa are included regardless of abundance and indicated by an asterisk (*).

Figure S3

File name: fS03_WM_DM_scatter_plot.png

Scatter plot showing the correlation between wet mass (WM) [g] and dry mass (DM) [g] of the 43 families, with a R^2 value and red regression line.

Figure S4

File name: fS04_WM_AFDM_scatter_plot.png

Scatter plot showing the correlation between wet mass (WM) [g] and ash-free dry mass (AFDM) [g] of the 43 families, with a R^2 value and blue regression line.

Figure S5

File name: fS05_DM_AFDM_scatter_plot.png

Scatter plot showing the correlation between dry mass (DM) [g] and ash-free dry mass (AFDM) [g] of the 43 families, with a R^2 value and green regression line.

Figure S6

File name: fS06_Size_WM_scatter_plot.png

Scatter plot showing the correlation between body-size (Size) [mm] and wet mass (WM) [g] of the 43 families, with a R^2 value and blue regression line.

Figure S7

File name: fS07_Size_DM_scatter_plot.png

Scatter plot showing the correlation between body-size (Size) [mm] and dry mass (DM) [g] of the 43 families, with a R^2 value and green regression line.

Figure S8

File name: fS08_Size_AFDM_scatter_plot.png

Scatter plot showing the correlation between body-size (Size) [mm] and ash-free dry mass (AFDM) [g] of the 43 families, with a R^2 value and red regression line.