**Metadata “combined\_post\_imputation\_derived\_traits”**

**Functional beta diversity of New Zealand fishes: characterising morphological turnover along depth and latitude gradients, with derivation of functional bioregions**

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In total, there were 144 species recorded across the 47 depth-by-location cells, and 509 species-by-cell occurrences. The original dataset comprised a complete set of 15 raw morphological measurements for 722 individuals observed in video footage (136 of these required some random-forest imputation, and missing traits were remeasured for 4 individuals), plus 291 museum specimens.

We calculated 8 trait variables, namely: total body length, eye size, oral gape position, jaw length relative to head length, elongation, eye position, caudal peduncle throttling, and pectoral fin position – each as a function of the 15 raw morphological measurements (2 of the raw morphological measurements were used only for data imputation, Table S3, Supporting Information). These morphological traits focused on key aspects of locomotion, visual perception and feeding for fishes that correspond to important functional variations in the body plan and structure of fishes across large depth gradients (Myers *et al*. 2019). For a diagram illustrating the raw morphological measurements taken from individual fishes identified in video footage (stereo-BRUVs) or from museum specimens see Fig. S1 of Myers *et al.* in press.

We obtained representative trait values for every species within every cell in the study design, while taking into account the intraspecific trait variability.

**Columns:**

ID.indiv = A unique identifier for every individual from the BRUV dataset. Individuals coming from the museum dataset are denoted with an NA.

Genus\_Species = Scientific name, shown as Genus\_species.

Number = An indicator of different individuals within the same species across the dataset.

TL type = Indicates where the “TL” measurement terminated. TL = total body length, FL = fork length, SL = standard length (2 instances when there was a defect in the caudal fin), NA = TL for individual was imputed)

TL = Total body length (in mm)

Eyesize = Eye Size

OGPos = Oral Gape Position

JawHL = Jaw length relative to head length

Elo = Elongation

Eyepos = Eye Position

CPT = Caudal Peduncle Throttling

PFpos = Pectoral Fin Position

Origin = Origin of data. Complete rows of data (BRUV), museum specimen (Museum), imputed (BRUV\_Imputed), remeasured (Remeasured)

**Rows:**

8 derived traits for each of 1013 individual fishes.

**References**

Myers E. M., Anderson M. J., Eme D., Liggins L. & Roberts C. D. (2019) Changes in key traits versus depth and latitude suggest energy‐efficient locomotion, opportunistic feeding and light lead to adaptive morphologies of marine fishes. *J. Anim. Ecol.* 89, 309-322.

Myers E. M. V., Anderson M. J., Liggins L., Harvey E. S., Roberts C. D. & Eme D. (in press) High functional diversity in deep-sea fish communities, and increasing intra-specific trait variation with increasing latitude. *Ecol. Evol.*