

Electronic Supplemental Material

Table S1. List of studied species, with their diet and the information about presence/absence of the cerato-madibular ligament. The origin of dissected specimens is also provided.

Table S2. The estimated rates of evolutionary transition (Mean \pm SD) provided by the MuSSE model where the dietary shifts are independent on the cerato-mandibular ligament state. The first trait is related to the cerato-mandibular ligament (X: 0 = absence, 1 = presence) and the second trait to the trophic group (Y: 0 = other, 1 = planktivory). The subscripts refer to the state transitions. We assumed that all transition rates including a loss of the c-md ligament are equal ($q_{31} = q_{41} = q_{32} = q_{42}$) and that all transition rates including a gain of ligament equal to zero ($q_{13} = q_{14} = q_{23} = q_{24} = 0$) (values in bold).

| X, Y | 0,0 ₍₁₎ | 0,1 ₍₂₎ | 1,0 ₍₃₎ | 1,1 ₍₄₎ |
|--------------------|---|---|--------------------------------|--------------------------------|
| 0,0 ₍₁₎ | | 0.281 \pm 0.052 (q_{12}) | 0 (q_{13}) | 0 (q_{14}) |
| 0,1 ₍₂₎ | 0.013 \pm 0.008 (q_{21}) | | 0 (q_{23}) | 0 (q_{24}) |
| 1,0 ₍₃₎ | 0.003 \pm 0.0001 (q_{31}) | 0.003 \pm 0.0001 (q_{32}) | | 0.012 \pm 0.003 (q_{34}) |
| 1,1 ₍₄₎ | 0.003 \pm 0.0001 (q_{41}) | 0.003 \pm 0.0001 (q_{42}) | 0.010 \pm 0.004 (q_{43}) | |

Figure S1. The homologous landmarks used in the analysis of the fish body and oral jaws shape variation illustrated in *Dascyllus aruanus*. (a) Landmarks (LMs) used to define the overall body shape: LM (1) mouth tip; LM (2) centre of eye; LMs (3) and (4) anterior and posterior insertion of the dorsal fin; LMs (5) and (6) dorsal and ventral base of the caudal fin; LMs (7) and (8) posterior and anterior insertion of the anal fin; LM (9) insertion of the pelvic fin; LMs (10) and (11) inferior and superior insertion of the pectoral fin; LM (12) insertion of the operculum on lateral profile; LM (13) point of maximum curvature of the inner edge of the preoperculum; LM (14) top of the preoperculum. (b) Mandible shape: LM (1) rostral tip of the dentary; LM (2) dorsal tip of the coronoid process of the dentary; LM (3) dorsal tip of the articular process; LM (4) articulation fossa of articulo-angular with the quadrate; LM (5) dorsal tip of the retroarticular; LM (6) posterior end of the retroarticular; LM (7) anterior-most point of the retroarticular; LM (8) dorsal tip of the coronomeckelien; LM (9) ventral start of anterior process of the articulo-angular; LM (10) posterior end of the dentary; LM (11) anterior-most point of the articulo-angular; LM (12) ventral-most point of the dentary. (c) Premaxillary bone shape: LM (1) anterior-most point of the dentigerous process; LM (2) tip of the ascending process; LM (3) ventral-most point of the interprocess edge; LM (4) dorsal point of the area which receives the maxillary process; LM (5) crest of the dentigerous process; LM (6) posterior end of the dentigerous process.

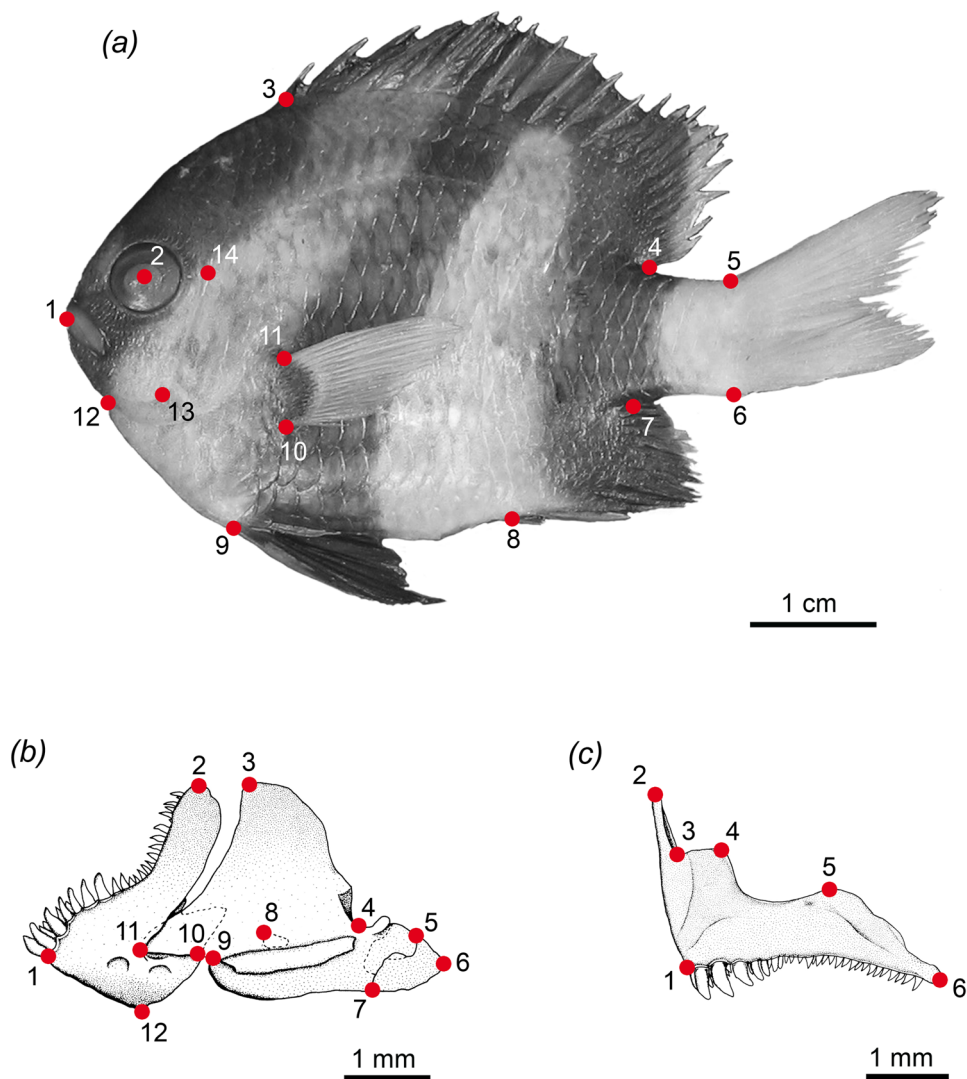


Figure S2. Morphospace visualizations for (a) the overall body, (b) the mandible and (c) the premaxilla. For every units, the three first principal components (PCs) are illustrated and their percentage of shape variance summarized are given in brackets. The species having no cerato-mandibular ligament are highlighted in blue and the species with the cerato-mandibular ligament are in red. The deformation grids illustrating the shape variation along each PC-axis are illustrated and some variations have been exaggerated for better visualization (see numbers in brackets).

