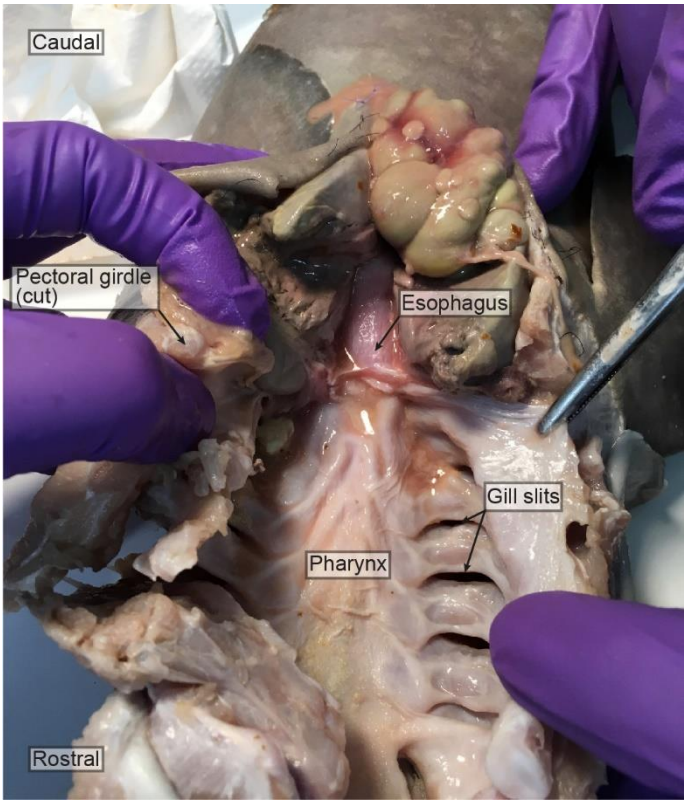


Figure S1: Ventral dissection photo of the pharynx of a white-spotted bamboo shark, *Chiloscyllium plagiosum*. The esophagus lies within the plane of the pectoral girdle, which can be seen cut on the left.

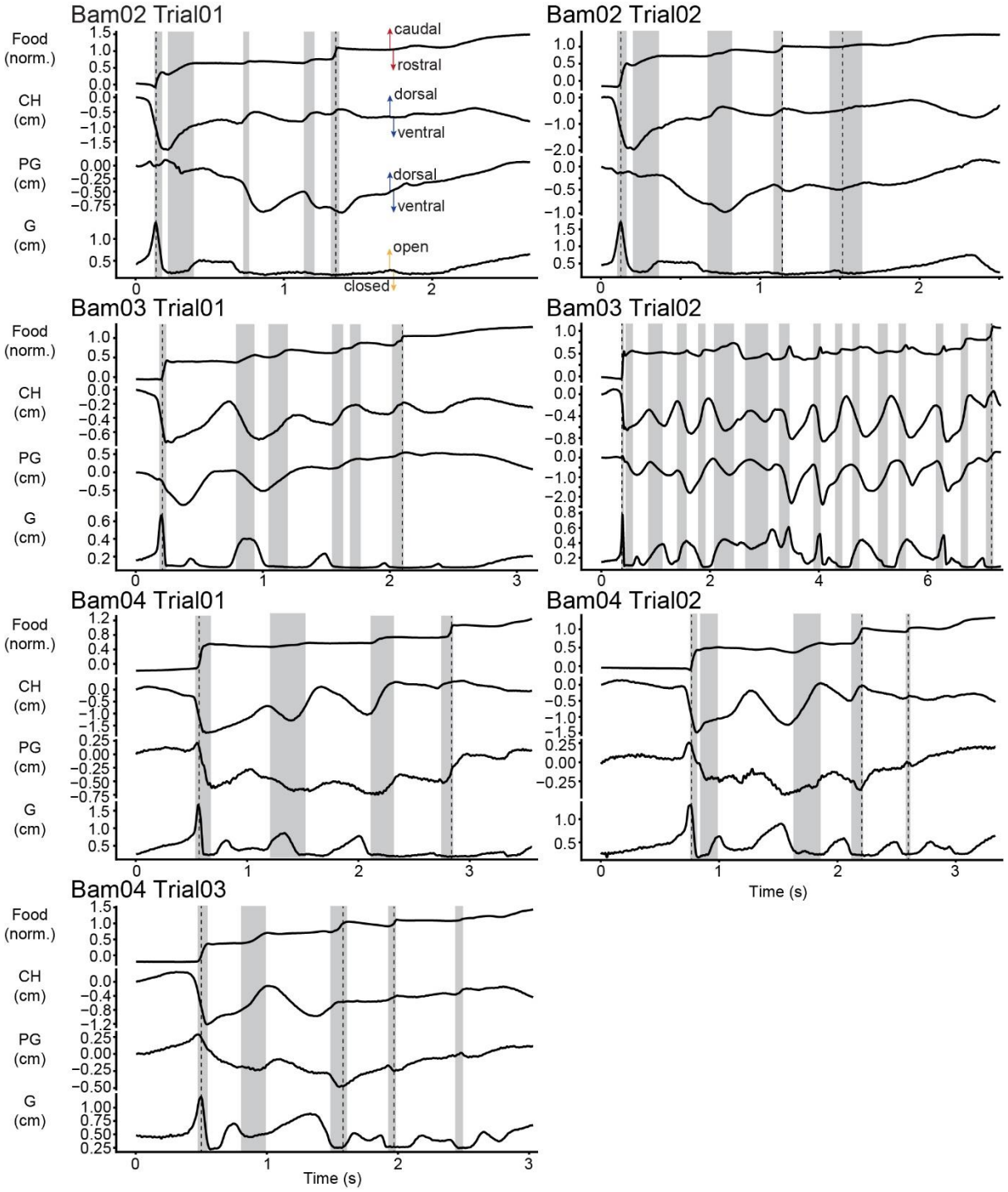
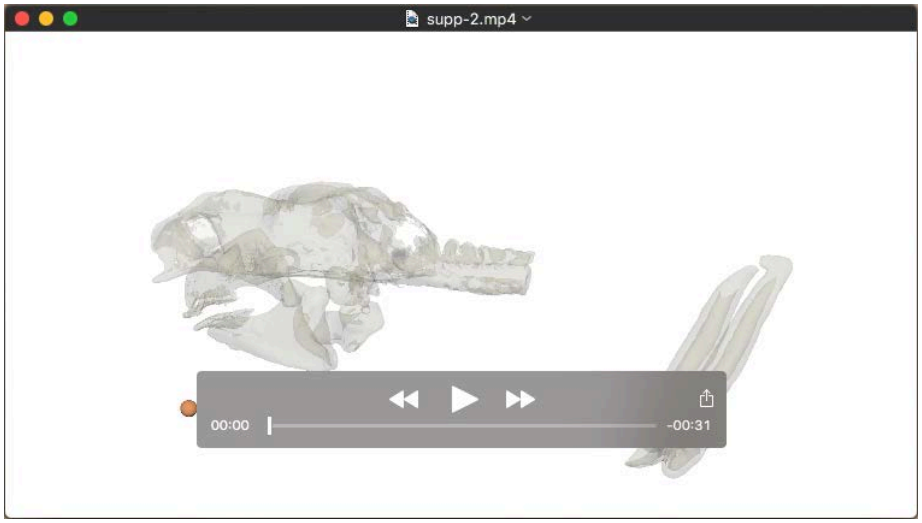
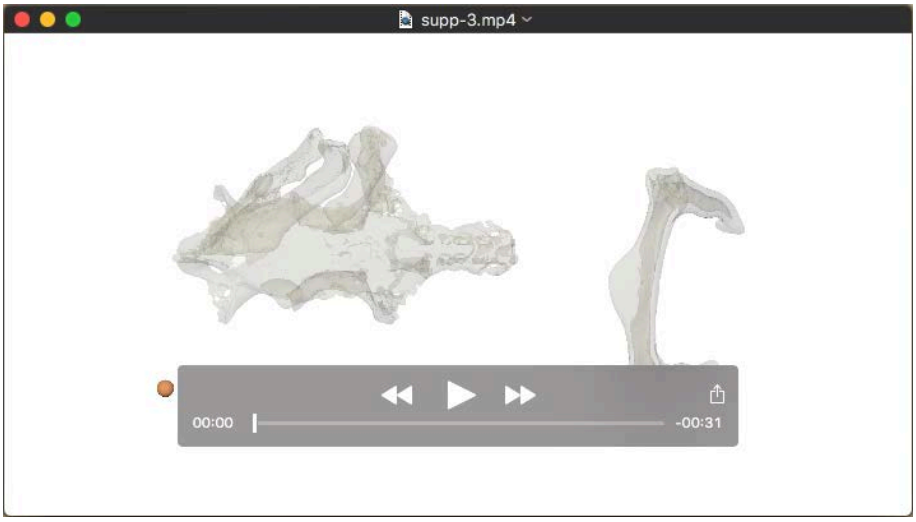


Figure S2: Rostrocaudal translations of food, displacements of ceratohyal and pectoral girdle, and gape width over time in each trial. All subplots are plots of food and cartilage movements and gape. With the exception of gape, all movements were calculated relative to the chondrocranium ACS. The shaded bars represent periods of caudally-directed food translation, and the vertical dotted lines represent the times when the food passes the jaw tips and the pectoral girdle (on the food y-axis, where y = 0.0 and y = 1.0, respectively). The directional arrow colors in the first subplot correspond to the arrow colors of the ACS in Fig. 4A. Abbreviations: Food (norm), normalized translation of food on the rostrocaudal axis; CH, displacement of the rostroventral tip of the ceratohyal in the dorsoventral direction (cm); PG, displacement of the ventral tip of the pectoral girdle (cm) in the dorsoventral direction; G, gape width, calculated from the distance between the jaw tips (cm).



Movie 1: Lateral view of a bamboo shark feeding on squid (Bam03, Trial01), demonstrating the four phases of food motion: (1) initial suction capture, (2) slow transport through the oropharynx, (3) fast transport into the esophagus, and (4) slow transport inside the esophagus. This XROMM animation includes the chondrocranium, pectoral girdle, and left-side Meckel's cartilage, palatoquadrate, ceratohyal, and hyomandibula (see Fig. 1) as semi-transparent bone models. The chondrocranium has been frozen in 3-D space, with other skeletal elements and the food item (orange) moving relative to it. The video is playing 10 times slower than real time (see Methods for X-ray recording settings).



Movie 2: Ventral view of a bamboo shark feeding on squid (Bam03, Trial01), demonstrating the four phases of food motion: (1) initial suction capture, (2) slow transport through the oropharynx, (3) fast transport into the esophagus, and (4) slow transport inside the esophagus. This XROMM animation includes the chondrocranium, pectoral girdle, and left-side Meckel's cartilage, palatoquadrate, ceratohyal, and hyomandibula (see Fig. 1) as semi-transparent bone models. The chondrocranium has been frozen in 3-D space, with other skeletal elements and the food item (orange) moving relative to it. The video is playing 10 times slower than real time (see Methods for X-ray recording settings).