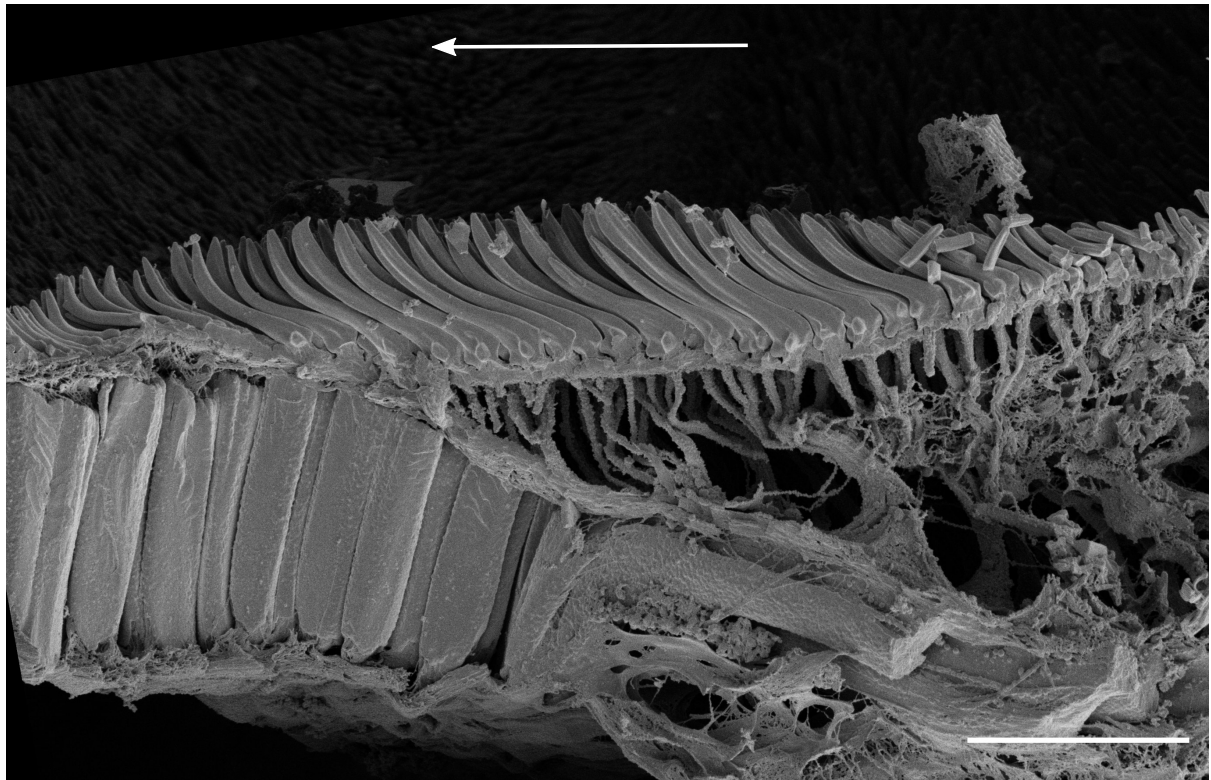
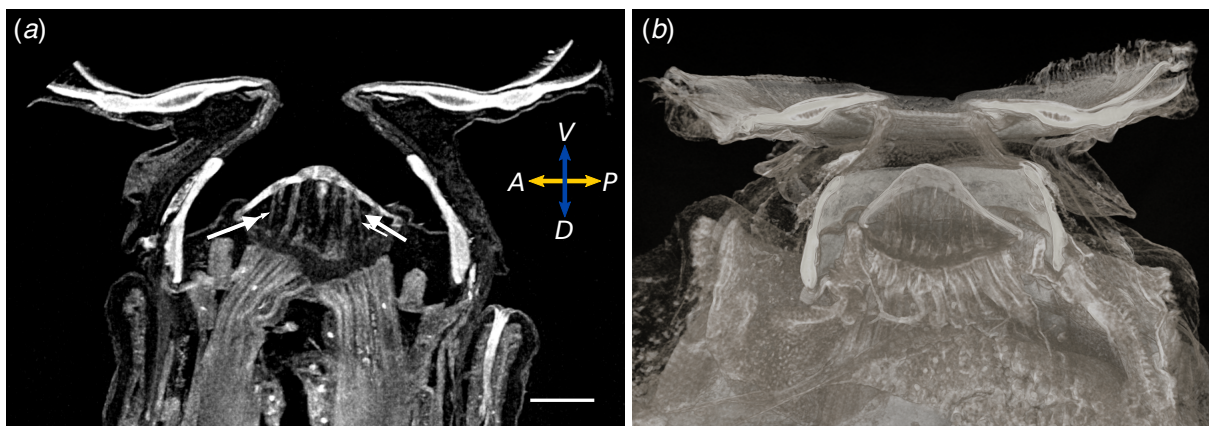


1 Supplementary figures



Supplementary Figure 1. Freeze-fracture SEM image of a *Liponeura cinerascens* suction disc showing spine-like microtrichia. The spine-like microtrichia are similar in shape to those found in *L. cordata* (see Fig. 5b). Arrow points towards the centre. Scale bar 5 μm.



Supplementary Figure 2. Thread-like attachments between piston muscles and the piston cone. From *Liponeura cordata* micro-CT data. (a) Lateral view of piston cone shows a void

10 volume where the thread-like attachments connect the ends of the muscles to the top of the
11 piston cone. Arrows indicate thread-like attachments. A: anterior, P: posterior, L: left, R:
12 right. Scale bar 50 μm . (*b*) 3D rendering highlighting the thin fibrous nature of the thread-like
13 attachments.