

**Appendix S2.** Principal component analysis (PCA) plots for the diatoms and leaf shape extraction example.  
(A) PCA plot for the identification of diatom genera (*Luticola*, *Gomphonema*, *Cymbella*, and *Gyrosigma*).  
(B) PCA plot for all the specimens examined in the shape study. (C) Example of shape extractions for leaves.





