**Aerodynamic reconstruction of the primitive fossil bat *Onychonycteris finneyi* (Mammalia: Chiroptera)**

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**Appendix 1**

**Materials and Methods: details on the digital reconstruction of the handwing of *Onychonycteris finneyi***

From photographs of the two knownspecimens of *Onychonycteris*, the holotype ROM 55351A and the paratype ROM 55055 (Simmons et al. 2008), we digitally reconstructed the aerofoil extended using CorelDRAW X7. The bones were placed in a standardized position reflecting normal positioning of the joints as seen in living bats when the wings are outstretched (Fig. 1). We reconstructed the probable outline of the patagial membranes using the relative lengths and position of the digits and the calcar (preserved only in the holotype) as benchmarks. From the reconstructions of both specimens, the following measures were estimated using ImageJ software (Abramoff et al. 2004): total wing area (S), handwing area (Shw), armwing area (Saw), total wingspan (B), handwing length (Lhw), and armwing length (Law). We calculated all metrics using an arbitrary but conservative value of error of ±5% to allow for uncertainty that may arise due to membrane outlining in wing reconstruction. These extreme estimates are indicated in brackets in Table 1. In a similar way, an error of ±1% was used for the body mass estimation; this value was chosen because the fit (*r2*) of the regression model from which the fossil mass was estimated (based on the least mid-shaft diameter of the humerus as the best empirical predictor of mass in bats) was 99% (see Giannini et al. 2012). The derived variables (AR, WL, Itip) were calculated as described in the main text, bracketing the extreme values in Table 1 according to the error derived from the simple metrics.