

Early taming of the cat in Cyprus

J.-D. Vigne^{1*}, J. Guilaine^{2,3}, K. Debue¹, L. Haye² & P. Gérard^{2,3}

SUPPORTING ONLINE MATERIAL

Domestication and taming. Archaeozoologists generally use the word domestication when they have good evidence for morphological modifications such as the decrease of the general size or the shortening of the face and tooth row. However, morphological modifications may not appear for some considerable time after the original association with man. We use the term ‘taming’ for the early history of the domestic cat when no morphological modification is visible. In addition this term, which has also been used by Malek (*S1*) for the same stage of domestication, fits well the status of cat as an ‘exploiting captive’.

Cultural situation of Shillourokambos. The cultural characters of the late 9th millennium Shillourokambos archaeological assemblages are very similar to those of the mainland for the same period. Indeed, it has now been established that Cyprus was settled by Neolithic farmers from the continent who brought with them both crops and herds (*S2, S3*).

Brief description of the human burial. The sub-circular (55 x 60 cm) grave was situated in the upper part of the archaeological deposits, just under the 25/30 cm thick arable ploughed earth. It had been dug into the remains of a mud building which dates to the middle phase of the occupation of Shillourokambos. It contained the complete skeleton in primary position of a human of 30 years of age or older; the body, which had partly collapsed during decomposition, had probably been buried in a bag, in a semi-sitting position, facing West; the arms were crossed against the chest and his legs completely folded. The list of the ten ceremonial items is as follows: a marine shell, a stone pendant, a very uncommon discoid flint scraper, two small polished axes (one of them broken), a pumice stone, a fragment of ochre, a large flint piercing tool, and several non-retouched flint blades and bladelets. This is the only burial with such a high number of offerings for the whole Preceramic and Aceramic Neolithic in Cyprus.

Description and contents of the small shell pit. The circular pit was 8 cm wide and 4 cm deep. It contained 20 complete shells of *Columbella rustica*, 3 of *Nassarius gibbosulus*, 1 of *Cerithium cf. vulgatum*. One shell of each species had been

artificially pierced; the remaining 21 shells had not been worked. All the 24 shells had been arranged around a central raw fragment of a green soft stone used for jewellery ('picrolite').

Description of the cat grave and skeleton. The grave was oval (43 x 25 cm) and ca. 15 cm deep. It was dug into and filled with the same archaeological layer as the human burial, at the same level and 20 cm away from its southeastern edge. A small asymmetric mound of sediment all along the North edge of the grave was probably composed of the packed down-products of the excavation of the grave, attesting man-made excavation. The cat skeleton was complete, except the last lumbar vertebra, sacrum, pelvis, possible *baculum*, tail bones and a few elements of the limb extremities. The missing parts were all situated at the highest level, suggesting that the complete body had been buried and that the uppermost parts were destroyed by ploughing; the skeleton laid on its left side, the head to the West and the back to the South, i.e., in the same orientation as that of the human skeleton; the head was bent backwards in relation to the neck; fore and rear limbs were grouped under the stomach, respectively backwards and forwards stretched, but the removal of the limb extremities precludes any explanation to this peculiar arrangement.

The finds have been withdrawn as a block, for laboratory excavation and casting. The entire skeleton was articulated, a small amount of movement to the anatomical arrangement being due to collapse during the decomposition process. There is no indication about the origin of the death. Microscopic examination did not reveal any cut or burn marks. The absence of significant quantities of sediments between the right and left rib series indicates that the thoracic cavity had not been opened before the burial.

Anatomic and taxonomic characters of the cat. Because the pelvic region is missing, the gender of the animal cannot be known. Large size suggests male rather than female. Full erupted cheek teeth associated to un-fused femur and tibia distal epiphyses indicate that the animal died at about 8 months of age, i.e., young but with its adult size. Though severely damaged, the skull was sufficiently well preserved to allow a good determination of the species among the different small felids of Western Asia, according to the morphological criteria which allow clear-cut distinctions between them (S4). The small size and the shape of the *tympani bullae* allowed us to eliminate *Felis margarita*, which is smaller than *Felis silvestris*. In a lateral view, the dorsal profile of the fronto-nasal line falls abruptly with an angle of more than 45°, as

it does with *F. silvestris*, and does not make an open angle (less than 25°) as it does with *Felis chaus* (criteria 33, S4). In addition, the orbital lower rim is flattened, enlarged and medially inflected as with *F. silvestris lybica*, whereas it is not in *F. chaus* (criteria 44, S4).

Post-cranial and cranial measurements fall in the upper half of the range of variation of size of the Western Asian *Felis silvestris lybica* (S5, S6) (Fig. S1), i.e., much smaller than the smaller *F. chaus* which have been measured in Israel (S6), the length of the upper P4 of which are never under 14.10 mm (N = 23). The smaller values in Anatolia for *F. chaus* are not less than 12.7 mm (N = 9; Helmer, pers. comm.). The dimensions of the cheek teeth and mandible are slightly larger than the other ones at Shillourokambos and Khirokitia (Fig. S2).

Lengths of the limbs long bones are much larger than the ones of historical and present-day domestic cats. For example, the greatest length of the humerus is 119.5 mm, which is even longer than the humerus of the very large male roman domestic cat described at Quseir (Red Sea Coast, S7), and exceeds the maximal length of series of European domestic cat (Table S1).

Supporting figures and legends

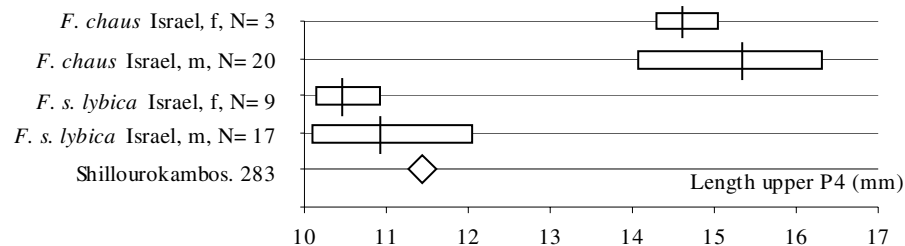


Fig. S1: Comparison of the size of the upper fourth premolar of the cat from the human burial at Shillourokambos, with that of present day males and females of *Felis chaus* and of *Felis silvestris lybica* from Israel (according to S6).

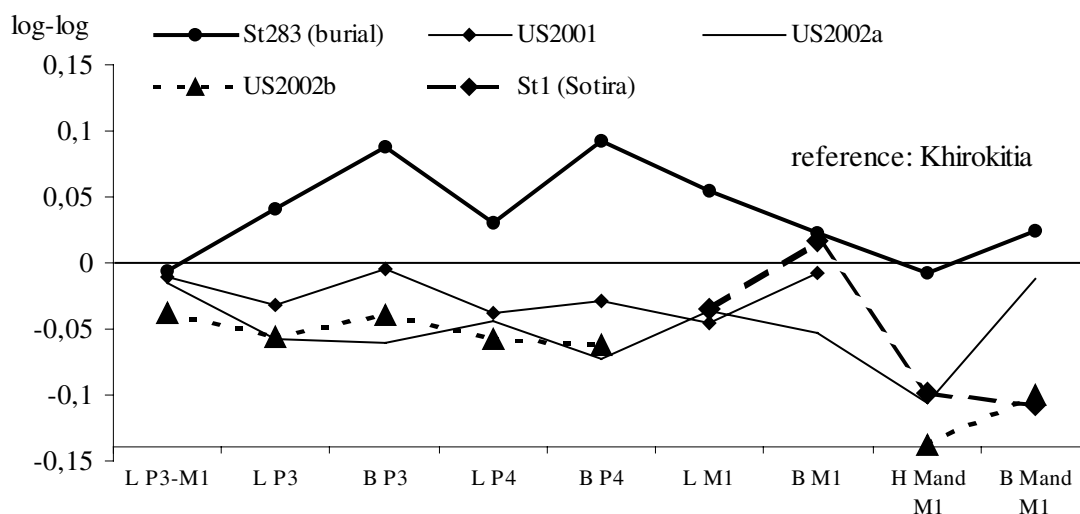


Fig. S2: *Felis silvestris lybica*, comparison, in terms of log differences, of the measurements of the mandibles of the Shillourokambos cats with the one of Khirokitia (according to S8), chosen as the reference. B, breadth, L, length; M, molar; P, premolar. For Shillourokambos, the three mandibles labeled US2001, US2002a and US2002b have been found in layers which are nearly contemporaneous with the human burial (St283) with the complete cat skeleton. The mandible labeled St1 is more recent; it dates to the Middle Neolithic Sotira phase (c. 8-7th millennia BP cal).

Supporting table and legend

	Count	Mean	Std	Min.	Max.
Schleswig	36	90,1	6,44	79	105
Hungary	10	86,0	7,28	72	96

Table S1: Reference measurements of the greatest length of two large series of archaeological humerus of medieval domestic cats in Germany (Schleswig, S9) and in Hungary (S10).

Supporting references

- S1. J. Malek, *The Cat in Ancient Egypt* (British Museum, London, 1993).
- S2. J. Guilaine, F. Briois, J.-D. Vigne, I. Carrère, *C. R. Acad. Sci., Paris, Sciences de la Terre et des planètes* **330**, 75 (2000).
- S3. E. Peltenburgh *et al.*, *Antiquity*, **74**, 844 (2000).
- S4. L. O. Salles, *Felid phylogenetics: Extant taxa and skull morphology (Felidae, Aeluroidae)*. (Am. Mus. Nat. Hist., New York, 1992) (*Am. Mus. Novitates*, 3047).
- S5. B. Kurtén, *Acta Zool. Fennica* **107**, 1 (1965).
- S6. T. Dayan, D. Simberloff, E. Tchernov, Y. Yom-Tov, *Am. Nat.* **136**, 39 (1990).
- S7. A. von den Driesch, J. Boessneck, *Journal of Archaeological Science* **10**, 205 (1983).
- S8. S. J. M. Davis, in *Fouilles récentes à Khirokitia (Chypre) 1983-1986*, A. Le Brun, Ed. (ADPF, Edition Recherches sur les Civilisations, Paris, 1989), pp. 189-221.
- S9. N. Spahn, *Untersuchungen an Skelettresten von Hunden und Katzen aus dem mittelalterlichen Schleswig. Ausgrabungen in Schleswig, berichte und Studien 5*. Neumünster, Karl Wachholtz verlag (1986).
- S10. S. Bökönyi, *History of Domestic Mammals in Central and Eastern Europe* (Akadémiai Kiadó, Budapest, ed. 2, 1988).