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CATALOGUE OF TYPE SPECIMENS IN THE VERTEBRATE
COLLECTIONS OF THE MUSEUM OF GEOLOGY
AND PALEONTOLOGY
OF THE UNIVERSITY OF FLORENCE (ITALY).
II, CARNIVORA, FELIDAE

Riassunto — Catalogo dei tipi presenti nelle collezioni di Vertebrati del Museo di Geologia e Paleontologia dell'Università di Firenze. Carnivora, Felidae. Con la famiglia Felidae continua la serie di cataloghi dei tipi dedicata ai Vertebrati. Gli esemplari tipo dei Felidi conservati presso il Museo di Firenze appartengono alle seguenti 6 specie: *Felis lunensis*, *Felis (Cynailurus ?) etruscus*, *Felis toscana*, *Ursus cultridens*, *Machairodus (Meganthereon) crenatidens*, *Machairodus (Meganthereon) nestianus*.

Summary — With the family Felidae continues the series of catalogues of types devoted to Vertebrates. The type specimens of Felids preserved in the Museum of Florence belong to 6 species: *Felis lunensis*, *Felis (Cynailurus ?) etruscus*, *Felis toscana*, *Ursus cultridens*, *Machairodus (Meganthereon) crenatidens*, *Machairodus (Meganthereon) nestianus*.

Key words — Carnivora, types, Villafranchian.

The type specimens belonging to the Family Felidae, preserved in the Geological and Palaeontological Museum of Florence are constituted by 8 specimens of 6 different species. Other referred specimens are introduced for the complete description of the species. These are: *Felis lunensis* Martelli 1906 (now *Felis silvestris lunensis*), *Felis (Cynailurus ?) etruscus* Del Campana 1916 (now *Acinonyx pardinensis*), *Felis toscana* Schaub 1949 (now *Panthera toscana*), *Ursus cultridens* Cuvier 1824 (now *Megantereon cultridens*), *Machairodus (Meganthereon) crenatidens* Fabrini 1890

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(now *Homotherium crenatidens*), *Machairodus (Meganthereon) nestianus* Fabrini 1890 (now *Homotherium crenatidens*).

All the specimens come from Tuscany and belong to the Villafranchian age.

This catalogue has been prepared in accordance to other catalogues already published (DELLE CAVE, 1980 e 1982; CIOOPPI & MAZZINI, 1983) and follows the terminology of the International Code of Zoological Nomenclature (1964). The acronym IGF (Istituto Geologico Fiorentino) distinguishes all catalogue numbers of the Museum of Geology and Paleontology of Florence.

Order : CARNIVORA Bowdich, 1821
Suborder : FISSIPEDA Blumenbach, 1791
Infraorder : AELUROIDEA Flower, 1869
Superfamily : FELOIDEA Simpson, 1931
Family : FELIDAE Gray, 1821

1) Subfamily : FELINAE Trouessart, 1885

Genus : *Felis* Linneus, 1758

Felis lunensis Martelli 1906

(now: *Felis silvestris lunensis*; Ficcarelli & Torre, 1974)

IGF 4298 - HOLOTYPE

Right mandibular ramus, lacking of the ascending ramus, with well preserved C, P3, P4, M1. Probably it was a young adult individual. Olivola, Val di Magra (Toscana). Collected by Forsyth Major, 1890. Late Villafranchian.

Felis lunensis MARTELLI 1906, 607-612, pl. 1, figs. 3a, 3b.

Felis silvestris lunensis; FICCARELLI & TORRE, 1974, 312-317, pl. 1, figs. 1, 1a, 4.

Note: in the Museum of Florence there are also a complete left anterior limb and a portion of right anterior limb, coming from Olivola too, collected by Major, 1890. Ficcarelli & Torre (1974) believe that these specimens may belong to a same animal to which perhaps may be referred also the right mandibular ramus on which this species has been instituted.

2) Subfamily : PANTHERINAE Pocock, 1917

Genus : *Acinonyx* Brookes, 1828

Felis (Cynailurus ?) etruscus Del Campana, 1916

(now: *Acinonyx pardinensis* Croizet et Jobert; Viret 1954)

IGF 12476 - SYNTYPE

Deformed skull. Uccellatoio, near Montopoli, Lower Valdarno. Excavation 1880, F. Major. Early Villafranchian.

Felis sp. media; WEITHOFER, 1889, 67.

Felis (Cynailurus ?) etruscus DEL CAMPANA, 1916, 22-33, pl. 1, figs. 1a, 1b

(?); THEILHARD & PIVETEAU, 1930, 113.

(?); SCHAUB, 1949, 495.

Acinonyx pardinensis; VIRET, 1954, 66-67.

IGF 12477 - SYNTYPE

Left mandibular fragment with P3, P4, M1. Uccellatoio, near Montopoli, Lower Vadarno. Excavation 1880, F. Major. Early Villafranchian.

Felis sp. media; WEITHOFER, 1889, 67.

Felis (Cynailurus ?) etruscus DEL CAMPANA, 1916, 22-33, pl. 1, figs. 2a, 2b.

(?); THEILHARD & PIVETEAU, 1930, 113.

(?); SCHAUB, 1949, 495.

Acinonyx pardinensis; VIRET, 1954, 66-67.

Note: the two syntypes belong to the same individual.

3) Subfamily : Pantherinae Pocock, 1917

Genus : *Panthera* Oken, 1816

Felis toscana Schaub 1949

(now: *Panthera toscana* (Schaub); Ficcarelli & Torre, 1968)

IGF 851 - LECTOTYPE

Right mandibular ramus with P3, P4, M1. S. Maria near Il Tasso, Upper Valdarno. Purchased by F. Brilli, 1885. Late Villafranchian.

Felis arvernensis; FABRINI, 1892, 261

Leopardus arvernensis; DEL CAMPANA, 1915, 241, 275, pl. 24, figs. 3a, 3b.

Felis toscana; SCHAUB, 1949, 496-500.

Panthera toscana; FICCARELLI & TORRE, 1968, 177-182, pl. 32, figs. 1a, 1b, 1c.

4) Subfamily : *Machairodontinae* Gill, 1872

Genus : *Megantereon* Croizet et Jobert, 1828

Ursus cultridens Cuvier 1824

(now: *Megantereon cultridens* Cuvier 1824, partim; Ficcarelli 1979)

IGF 816 - LECTOTYPE

Upper right canine. Near Figline, Upper Valdarno. Late Villafranchian. Purchased by farmer Pieralli, 1812.

Ursus cultridens CUVIER, 1824, 516-517.

Ursus drepanodon; NESTI, 1826, 5-6.

Ursus cultridens issiodorensis; CROIZET & JOBERT, 1828, 190-195.

Felis megantereon; BRAVARD, 1828, 139-145.

Machairodus sp. indet.; Kaup, 1832, 24-28.

Felis megantereon; BLAINVILLE, 1841, 129-140.

Megantereon macroscelis; POMEL, 1853, 55.

Machairodus cultridens; Pictet, 1853, 230.

Machairodus cultridens; GERVAIS, 1859, 230.

Machairodus cultridens; WEITHOFER, 1889, 67.

Machairodus (Megantereon) cultridens; FABRINI, 1890, 134, pl. 6, figs. 1, 2.

Machairodus cultridens; BOULE, 1901, 552-556, fig. 3, 554.

Megantereon megantereon; MATTHEW, 1929, 499-503.

Megantereon megantereon; PILGRIM, 1931, 127-128.

Megantereon cultridens; Ficcarelli, 1979, 17-21, pl. 1, figs. 2a, 2b, 2c.

Note: The complex synonymy of the species in question requires a short history to clarify how this species, during the years, has undergone so different denominations.

Cuvier (1824) referred to the genus *Ursus* the cast of a canine (IGF 816), of which he came into possession with another fragment of upper canine from Valdarno; he founded on this the species *Ursus cultridens*, separating this from *Ursus etruscus*, and compared it with drawings of some similar pieces from Eppel-sheim (Germany).

In 1826 Filippo Nesti, in his letter to Paolo Savi, proposed, for this specimen, the new specific name *Ursus drepanodon* («scythe-toothed bear»).

Two years later, in 1828, Croizet et Jobert, studying the fauna from Puy-de-Dôme (Auvergne, France), found some isolated flat canines similar to those studied by Cuvier and kept these canines in the genus *Ursus*, defining however two varieties of the species *cultridens*: *Ursus cultridens issiodorensis*, for canines with smooth edges, like those from Valdarno studied by Cuvier, and *Ursus cultridens arvernensis* for larger canines with crenulation in the concave edge.

They also observed, in the same monograph, a right mandibular ramus with several distinctive features and referred it to the family Felidae, proposing the new generic name *Megantereon* for this animal, in case someone later would confirm their hypothesis.

On the other hand Bravard (1828) had already determined as *Felis megantereon* this jaw, but noted that also the smooth canines of Valdarno could be referred to this species, on the ground of remarks made on a maxillary fragment.

He then distinguished the species *Felis cultridens*, including in this one only the animals with larger and crenulated canines. This distinction produced confusion because it opposed the denomination of Cuvier (1841) who first used the name «cultridens» for the smaller, smooth-edged canines.

Blainville (1841), in his «Osteographie», adopted the terminology of Bravard, *Felis megantereon*, but correctly referring to this species the specimen from Valdarno. Only Pomel (1853) resumed the generic name proposed by Croizet et Jobert, and called this specimen *Meganthereon* (sic) *macroscelis*, creating further confusion with the institution of this new species.

Pictet (1853) and Gervais (1859) referred to the species *Machaerodus cultridens* some specimens from Auvergne-Issoire (France), adopting a generic name proposed by Kaup (1832) for fossils from Eppelsheim; they also identified these specimens with similar specimens from Valdarno.

Weithofer (1889), Fabrini (1890) and Boule (1901) referred the canine (IGF 816) to the species *Machaerodus cultridens*. Boule (1901) however asserted, in a footnote, that the generic name *Meganthereon*, first proposed by Croizet & Jobert (1828), must be certainly preferred to the term *Machaerodus*, even if this one had already become usual in the scientific literature.

Matthew (1929) stated that the generic name for the species of Mont Perrier and Valdarno was «*Meganthereon*» and, according to Boule (1901), he affirmed that «it was to this genus that the machaerodont canine from Valdarno, wrongly ascribed by Cuvier to *Ursus etruscus* appears to have belonged». But he denied the validity of the name *cultridens* because «Cuvier specifically states that it is a new name for *etruscus* and therefore by the laws of nomenclature the type of *etruscus* is the type of *cultridens* and the machaerodont tusks were no part of the type subsequently referred material.». Pilgrim (1931) accepted Matthew's conclusions and asserted that *Machaerodus cultridens* was synonym of *Meganthereon megantereon*.

Finally Ficcarelli (1979) in his re-examination work on machaerodonts of Tuscany, defined the synonymy questions, accepting the validity of the species *cultridens* and proposing as lectotype of the new binomial *Meganthereon cultridens* the upper right canine from Upper Valdarno (IGF 816).

5) Subfamily : MACHAIRODONTINAE Gill, 1872

Genus : *Homotherium* Fabrini, 1890.

Machaerodus (Meganthereon) crenatidens Fabrini 1890

(now: *Homotherium crenatidens* (Fabrini); Ficcarelli, 1979)

IGF 820 - SYNTYPE

Upper left canine. Purchased by F. Brilli, 1879. Near Monte-carlo, Upper Valdarno. Late Villafranchian.

Machairodus (Meganthereon) crenatidens FABRINI, 1890, 164
Homotherium crenatidens; FICCARELLI, 1979, 21-25, pl. 5, fig. 4.

IGF 817 - SYNTYPE

Upper left canine. Near Restoni, Figline, Upper Valdarno. Excavation made by Regio Istituto di Studi Superiori of Florence in 1862. Late Villafranchian.

Machairodus (Meganthereon) crenatidens FABRINI, 1890, 162-164, pl. 6, figs. 3, 4.

Machairodus crenatidens; BOULE, 1901, 561-562, fig. 10.

Homotherium crenatidens; FICCARELLI, 1979, 21-25, pl. 3, fig. 2.

REFERRED SPECIMENS

IGF 815 -

Incomplete left mandibular ramus with C, P3, P4, M1. Infernuzzo, near Terranuova, Upper Valdarno. Purchased by the farmer Pacciani, 1874. Late Villafranchian.

Machairodus (Meganthereon) crenatidens FABRINI, 1890, 165-166, pl. 6, fig. 5.

Homotherium crenatidens; FICCARELLI, 1979, 22, pl. 2, figs. 12a, 12b.

IGF 819 -

Upper right canine. Il Tasso, Upper Valdarno. Purchased by F. Brilli, 1886. Late Villafranchian.

Machairodus (Meganthereon) crenatidens FABRINI, 1890, 164.

IGF 823 -

Upper right canine. Upper Valdarno. Grand-Ducal Collections. Late Villafranchian.

Machairodus (Meganthereon) crenatidens FABRINI, 1890, 164.

IGF 825 -

Upper right carnassial. Infernuzzo, near Terranuova, Upper

Valdarno. Purchased by the farmer Pacciani, 1873. Late Villafranchian.

Machairodus (Megathereon) crenatidens FABRINI, 1890, 168, pl. 5,
fig. 6.

Homotherium crenatidens; FICCARIELLI, 1979, 22, pl. 3, fig. 6.

IGF 833 -

Right mandibular ramus with both right and left canines and incisors. Infernuzzo, near Terranuova, Upper Valdarno. Purchased by the farmer Pacciani, 1874. Late Villafranchian.

Machairodus (Megathereon) crenatidens FABRINI, 1890, 166-167, pl.
5, fig. 4.

Homotherium crenatidens; FICCARIELLI, 1979, 22, pl. 3, figs. 1a, 1b.

6) Subfamily : MACHAIRODONTINAE Gill, 1872

Genus : *Homotherium* Fabrini, 1890

Machairodus (Megathereon) nestianus Fabrini, 1890

(now: *Homotherium crenatidens* (Fabrini 1890); Ficcarelli, 1979).

IGF 832 - HOLOTYPE

Skull with jaw, not well preserved. The upper left canine is lacking. Sammezzano, Upper Valdarno. Present of M. Paolucci, 1870. Late Villafranchian.

Machairodus (Megathereon) nestianus FABRINI, 1890, 172, pl. 6,
figs. 6, 7, 8.

Machairodus crenatidens; BOULE, 1901, 567.

Machairodus nestianus; SCHAUB, 1934, 406.

Homotherium crenatidens; FICCARIELLI, 1979, 22, pl. 4, figs. 1a, 1b,
1c, 2a, 2b, 2c.

REFERRED SPECIMENS

IGF 53V -

Upper left canine. Fornaci, Ponte di Castiglione, Massa. Present of De Stefani, 1882. Early Villafranchian.

Machairodus (Meganthereon) nestianus FABRINI, 1890, 176.
Homotherium crenatidens; FICCARIELLI, 1979, pl. 5, fig. 5, 21.

IGF 112V -

Upper right canine. Fornaci, Ponte di Castiglione, Massa. Present of De Stefani, 1882. Early Villafranchian.

Machairodus (Meganthereon) nestianus FABRINI, 1890, 176.
Homotherium crenatidens; FICCARIELLI, 1979, 21.

ACKNOWLEDGMENTS

The authors are grateful to Prof. A. Azzaroli for the critical review of the manuscript.

REFERENCES

- BLAINVILLE H.M., DUCROTAY DE (1841) - Ostéographie de cinq classes d'animaux véritables. **2**, 129-140, pl. 17 atlas.
- BOULE M. (1901) - Révision des espèces européennes de *Machairodus*. *Bull. Soc. Géol. France*, 4 ser., **1**, 551-573.
- BRAVARD A. (1828) - Monographie de la Montagne de Perrier, près d'Issoire (Puy-de-Dôme), et de deux espèces fossiles du genre *Felis*, découvertes dans l'une de ses couches d'alluvion. 145 p., 3 pls., Paris.
- CIOSSI E., MAZZINI M. (1983) - Catalogue of type specimens in the vertebrate collections of the Museum of Geology and Paleontology of the University of Florence (Italy). I, CARNIVORA, CANIDAE. *Atti Soc. Tosc. Sci. Nat., Mem.*, Serie A, **90**.
- CROIZET & JOBERT (1828) - Recherches sur les ossemens fossiles du département du Puy-de-Dôme, **1**, 224 p., 56 pls., Paris.
- CUVIER G. (1824) - Recherches sur les ossemens fossiles, où l'on rétablit les caractères de plusieurs animaux dont les révolutions du globe ont détruit les espèces. **5**, 547 p., 33 pls., Paris.
- DEL CAMPANA D. (1915) - Nuove ricerche sui felini del Pliocene italiano. *Palaeont. Ital.*, **21**, 233-290, Pisa.
- DEL CAMPANA D. (1916) - Nuove ricerche sui felini del Pliocene italiano, II. *Palaeont. Ital.*, **22**, 1-33, 8 pls., Pisa.
- DELLE CAVE L. (1980) - Catalogue of type specimens in the invertebrate palaeontological collections of the Museum of Geology and Palaeontology of the University of Florence (Italy). Trilobita. *Atti Soc. Tosc. Sci. Nat., Mem.*, Serie A, **87**, 61-64, Pisa.
- DELLE CAVE L. (1982) - Catalogue of type specimens in the invertebrate palaeontological collections of the Museum of Geology and Palaeontology of the University of Florence (Italy). Crustacea, Decapoda. *Atti Soc. Tosc. Sci. Nat., Mem.*, Serie A, **88**, 43-50, Pisa.

- FABRINI E. (1890) - I machairodus (*Meganthereon*) del Valdarno superiore. *Boll. R. Com. Geol.*, serie 3, 1, 121-145, 165-177, 6 pls., Roma.
- FABRINI E. (1892) - Su alcuni felini del Pliocene italiano. *Rend. R. Acc. Lincei*, Cl. Sc. Fis. Mat. Nat., ser. 5, 1, fasc. 7, 257-263, Roma.
- FICCARELLI G. (1979) - The villafranchian machairodonts of Tuscany. *Palaeont. Ital.*, 71 (n. ser. 41), 17-26, 5 pls., Pisa.
- FICCARELLI G., TORRE D. (1968) - Upper villafranchian panthers of Tuscany. *Palaeont. Ital.*, 64, 173-184, 16 pls., Pisa.
- FICCARELLI G., TORRE D. (1974) - Nuovi reperti del gatto villafranchiano di Olivola. *Atti Soc. Tosc. Sci. Nat., Mem.*, Serie A, 81, 312-317, 1 pls., Pisa.
- GERVAIS M.P. (1859) - Zoologie et Paléontologie Française. 1-544, 84 pls., 51 text-figs., Paris.
- INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE (1964) - Published by the International Trust for Zoological Nomenclature, 162 p., London.
- KAUP J.J. (1832) - Description d'ossements fossiles de mammifères inconnus jusqu'à présent, qui se trouvent au Muséum Grand-ducal de Darmstadt; avec figures litographiées. 89 p., 21 pls., Darmstadt.
- MARTELLI A. (1906) - Su due mustelidi e un felide del Pliocene toscano. *Boll. Soc. Geol. Ital.*, 25, 595-612, 1 pl.
- MATTHEW W.D. (1929) - Critical observations upon Siwalik Mammals. *Bull. Amer. Mus. Nat. Hist. New York*, 56, 437-560, 55 figs.
- NESTI F. (1826) - Lettera terza del Sig. Professore Filippo Nesti di alcune ossa fossili non per anco descritte al Sig. Professore Paolo Savi. Pisa, presso Sebastiano Nistri, 19 p., 3 pls.
- PICTET F.J. (1853) - Traité de Paléontologie. 1, 1-584, Paris.
- PILGRIM G.E. (1931) - Catalogue of the Pontian Carnivora of Europe. *Brit. Mus. Nat. Hist.*, 1-174, 2 pls., 30 text-figs., London.
- POMEL M. (1853) - Catalogue méthodique et descriptif des vertébrés fossiles (découverts dans le bassin hydrographique supérieur de la Loire, et surtout dans la vallée de son affluent principal, l'Allier). Paris, chez J.B. Baillièvre, 193 pp.
- SCHAUB S. (1934) - Observations critiques sur quelques Machairodontidés. *Ecl. Geol. Helv.*, 27/2, 399-406, Basel.
- SCHAUB S. (1949) - Revision de quelques carnassiers villafranchiens du Niveau des Etouaires (Montagne de Perrier, Puy-de-Dôme). *Ecl. Geol. Helv.*, 42/2, 492-506, Basel.
- TEILHARD DE CHARDIN P., PIVETEAU J. (1930) - Les mammifères fossiles de Nihowan. *Ann. Paléont.*, 19, 1-134, 23 pls., Paris.
- VIRET J. (1954) - Le loess à bancs durcis de Saint-Vallier (Drôme) et sa faune de mammifères villafranchiens. *Nouv. Arch. Mus. Hist. Lyon*, 4, 1-200, 33 pls., Lyon.
- WEITHOFER K.A. (1889) - Ueber die tertiären Landsägethiere italiens. *Jahrbuch der Geologischen Reichsanstalt*, 39, 55-82.

(ms. pres. il 31 ottobre 1983; ult. bozze il 31 dicembre 1983)