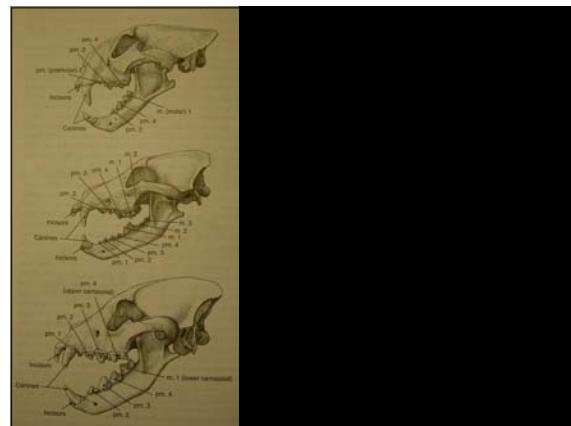
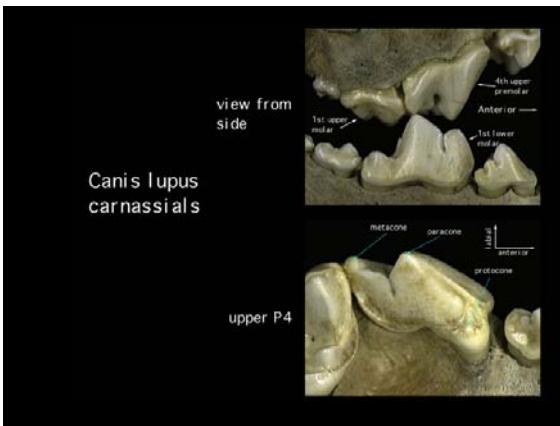
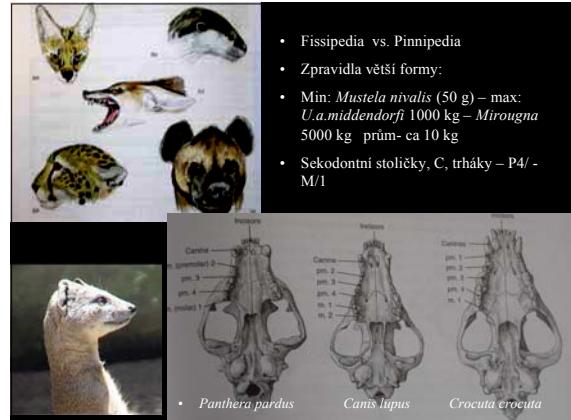


Carnivora (zejm. „Fissipedia“): diag. znaky

- Predátoři s četnými adaptacemi
- heterodontní chrup 3-1-4-3/3-1-4-3, C, trháky P4/-M1
- Příčný čelistní kloub**, kompletne glábela, čelistní muskulatura s dominancí m. temporalis, spodní posice čelistního kloubu
- Bulla tympani tvořená ekto- a entotympanicem
- Srůst scaphoid + lunatum; scapholunatum, volné centrale chybí
- Radius a ulna volné, bez srůstu a redukci
- Clavicula chybí
- Testes extrabdominální (ne u Phocidae)
- Penis s baculem (chybí u Hyaenidae)
- Uterus bicornis
- Placenta zonaria**, endothelochorální
- Altricíální jivo (extrém Ursidae až 1:1000), relativně krátká gravidita (ale častá zpožděná implantace Mustelidae, Ursidae)
- Specifické žlázy v anogenitální oblasti
- Laterální duplikatura na boltci (bursa auricularis)
- Rhinarium (philtrum jen u *Melursus*)
- Dokonalý zrak, tapetum lucidum
- Plantigrádní (Mustelidae, Procyonidae, Ursidae) resp. digitigrádní (Canidae, Felidae, Hyaenidae, Viverridae partim) s redukcí prstů (drápy): Canidae a Felidae 5 (4), Hyaenidae 4(4)
- Fémur bez trochanter tertius
- Arteria stapedialis redukována



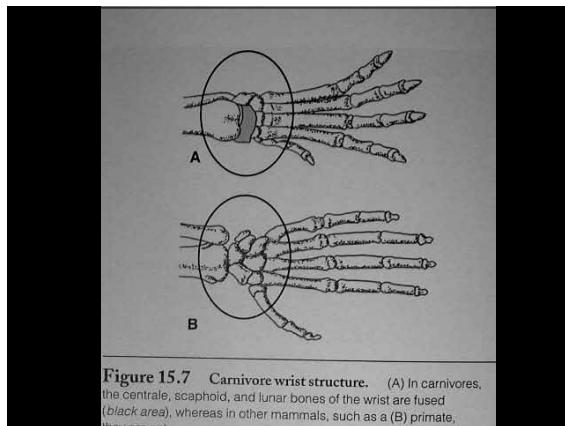
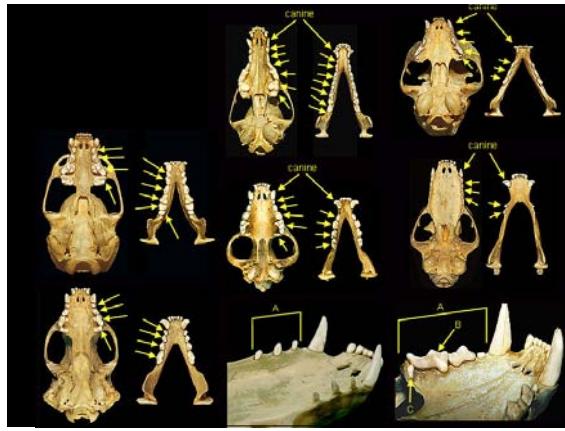
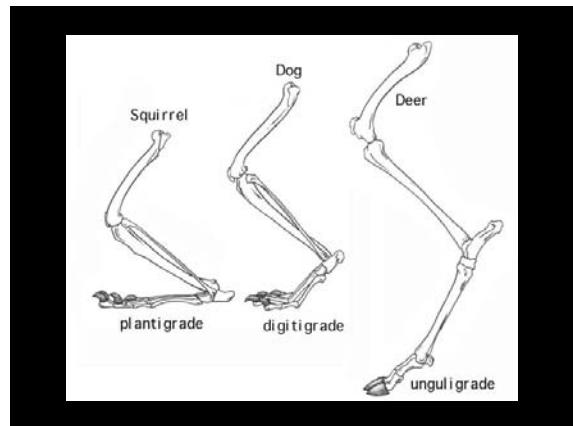


Figure 15.7 Carnivore wrist structure. (A) In carnivores, the centrale, scaphoid, and lunar bones of the wrist are fused (black area), whereas in other mammals, such as a (B) primate, they are not.



Carnivoramorpha Wyss & Flynn, 1993 [*Carnivora sensu lato*] ?-
 †*Aelurotherium* ?- †*Eosictis* ?- †*Elmensius* ?- †*Intyrichtis vanvalenii* (MacIntyre, 1966)
 Gingerich & Winkler, 1985 [*Bryanictis vanvalenii* MacIntyre, 1966] ?-
 †*Notoamphicyon* ?- †*Ravenictis krausei* Fox & Youzwyshyn, 1994; L. Paleoc. NA.
 [listed as a *cimolestan* by McKenna & Bell, 1997] ?: †*Vishnucyon* -+-- †*Viverravidae* Wortman & Matthew, 1899 [incl. *Didymictidae*] [*Viverraroidea*] --+-- †*Oodectes* Wortman, 1901 [*Oodectes* Wortman, 1901] [*paraphyletic Miacoidea: Miacidae*] |-
 †*O. herpestoides* Wortman, 1901 |-+-- †*O. proximus* (Matthew, 1909b) |-+-- †*O. jepseni* Guthrie, 1967 --+-+-- o †*Vulpavus* Marsh, 1871b [*Phlaeodectes*] [*paraphyletic Miacoidea: Miacidae*] |-+-- †*V. caninus* (Cope, 1881) |-+-- †*V. australis* |-+-- †*V. palustris* Marsh, 1871b |-+-- †*V. profectus* Matthew, 1909d |-+-- †*V. ovatus* Matthew, 1909d -+.
 †*Miacis parvivorus* Cope, 1872c |-+--+--+-- o †*Tapocyon* Stock, 1934 [*paraphyletic Miacoidea: Miacidae*] |||-+-- †*T. dawsonae* Wesley & Flynn, 2003] ||| -+-- †*T. robustus* (Peterson, 1919) | -+-- †*Miacis sylvestris* (Marsh, 1872) | -+-- †*Prohesperocyon wilsoni* (Gustafson, 1986) Wang, 1994 -+-- †*Querrygale angustidens* (Filhol, 1872) Kretzoi, 1945 sensu Wesley-Hunt & Werdelin, 2005 [*Viverra angustidens* Filhol, 1872; *Humberia Beaumonti*, 1966] [incl. *Viverra hastingsae* Davies, 1884; "Cynodon" *helveticus* (Rütimeyer, 1862)] |-o **Carnivora Bowdich, 1821** *sensu* Wyss & Flynn, 1993 (*sensu stricto*) (carnivores; petoeläimet) |- **Caniformia** Kretzoi, 1943 (dog-like carnivores;) -- **Aeluroidea** (cat-like carnivores;)

+Creadonta

- Paleocén-eocén (olig) N Amer., Eurasie
- diversifikovaná skupina faunivorních linii
- od Carnivora se liší zejm. výrazně nízkou encefalisací, morasiaci premoláru a maximisací M1/l oposice, absence charakteristického srůstu carpálních kostí (centrale+semilunare+scaphoid+scapholunare) atd.
- „sesteská skupina“ „Condylarthra“

- Arctocyonidae
- Oxyenidae
- Hyaenodontidae
- Mesonychidae

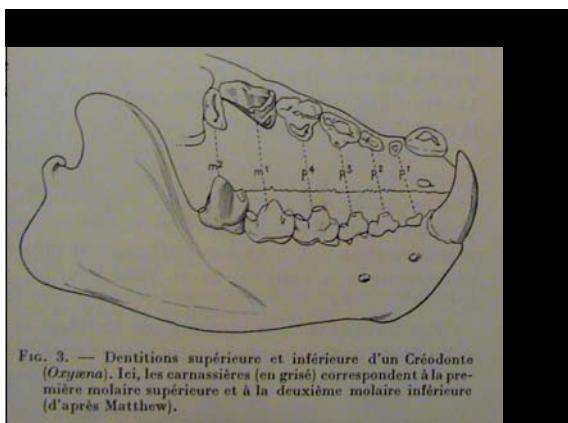
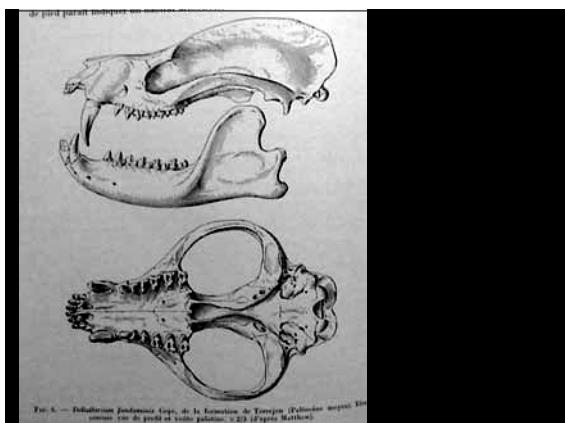


FIG. 3. — Dentitions supérieure et inférieure d'un Créodonte (*Oryxena*). Ici, les carnassières (en grisé) correspondent à la première molaire supérieure et à la deuxième molaire inférieure (d'après Matthew).

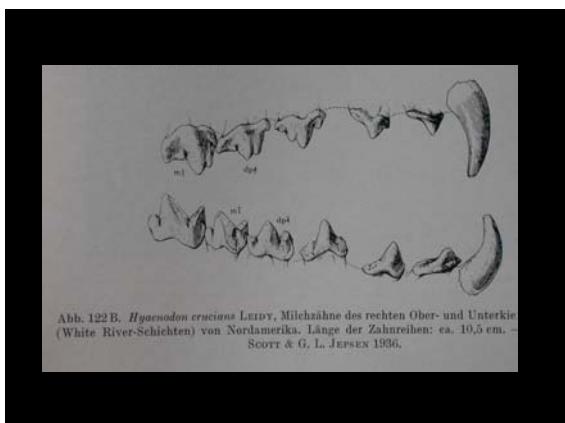
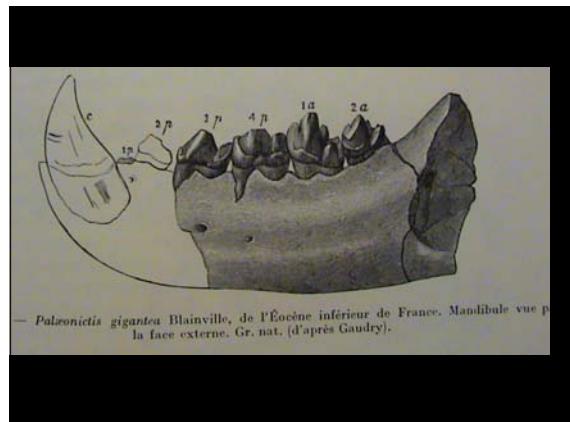
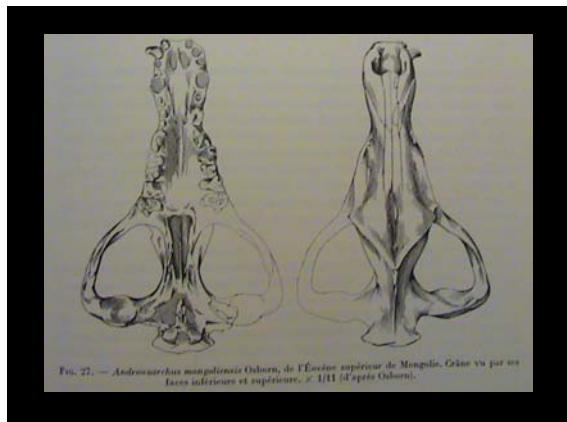
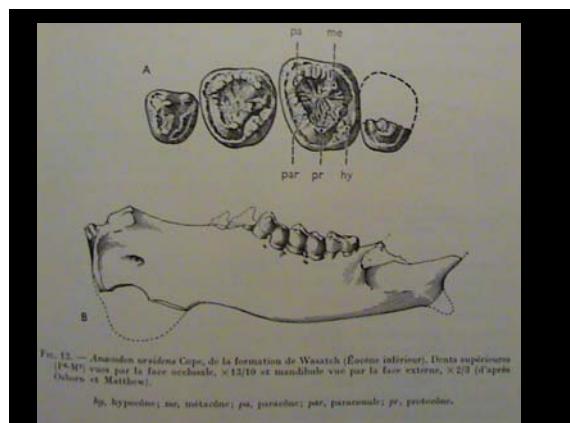
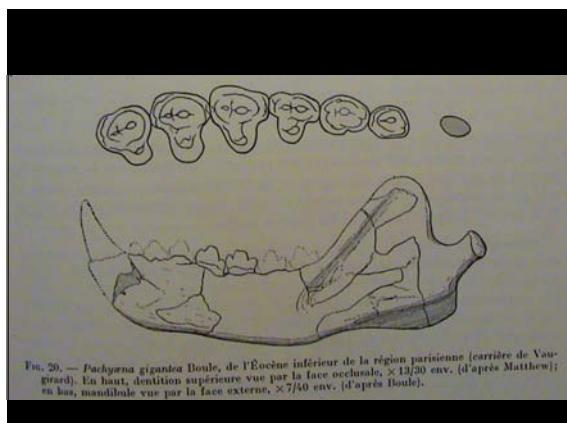
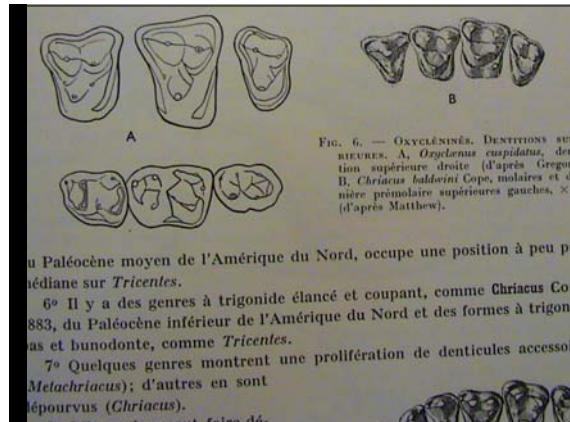
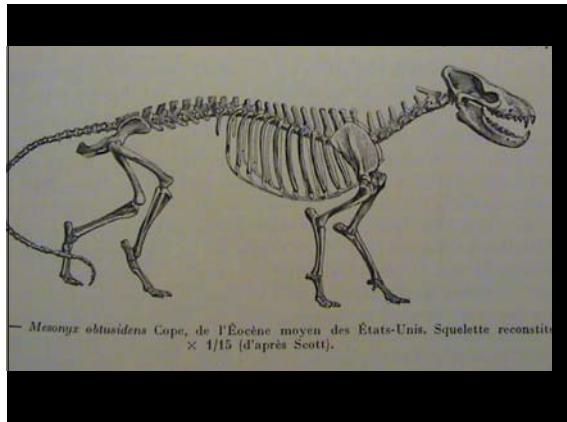


Abb. 122B. *Hyenaenodon crassus* LEIDY, Milchzähne des rechten Ober- und Unterkiefer (White River-Schichten) von Nordamerika. Länge der Zahnröhren: ca. 10,5 cm. — SCOTT & G. L. JEPSEN 1936.





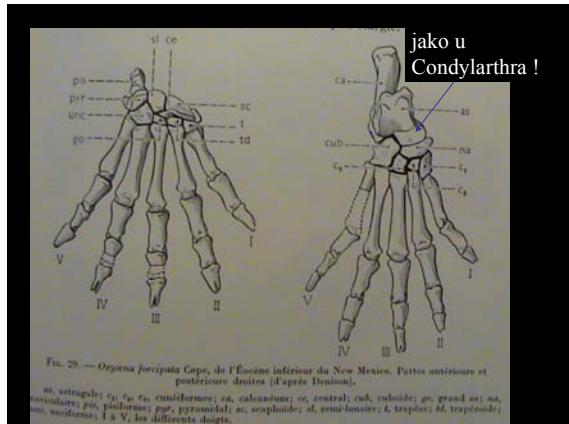
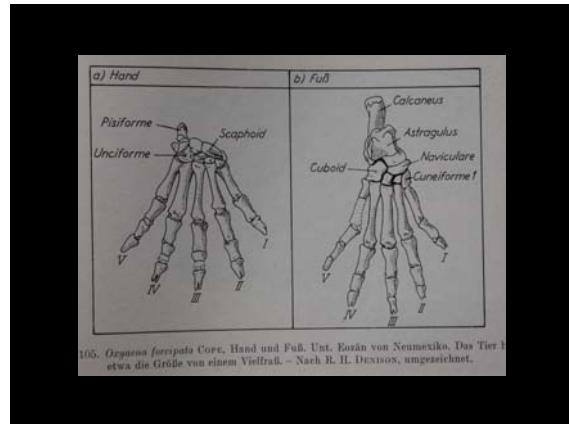
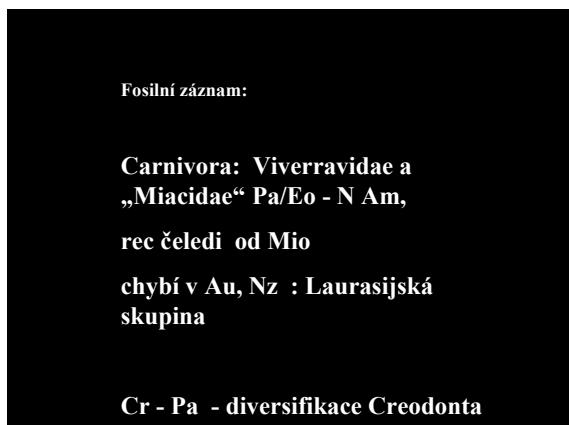


Fig. 29. — *Oryctes forcipata* Cope, de l'Éocène inférieur du New Mexico. Pattes antérieures et postérieures droites (d'après Denison).



105. *Oxygena forcipata* COPE. Hand und Fuß. Unt. Eozän von Neumexiko. Das Tier ist etwa die Größe von einem Vielzähler. — Nach R. H. DEXON, umgezeichnet.



Fosilní záznam:

**Carnivora: Viverravidae a „Miacidae“ Pa/Eo - N Am,
rec čeledi od Mio
chybí v Au, Nz : Laurasijská skupina**

Cr - Pa - diversifikace Creodonta

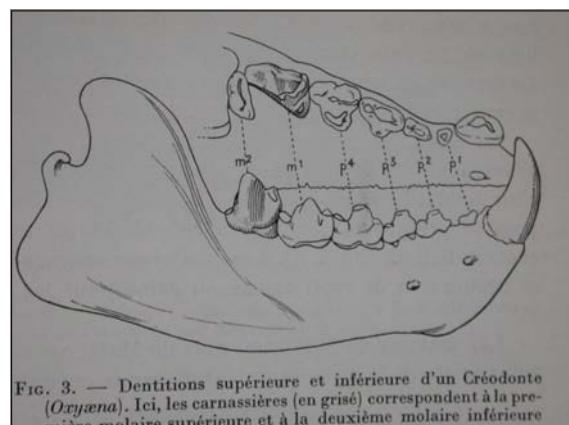
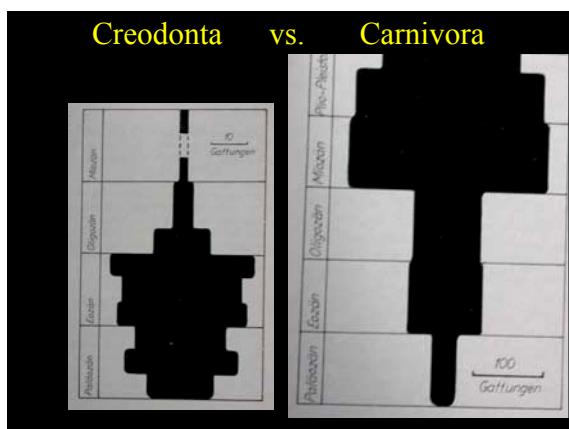
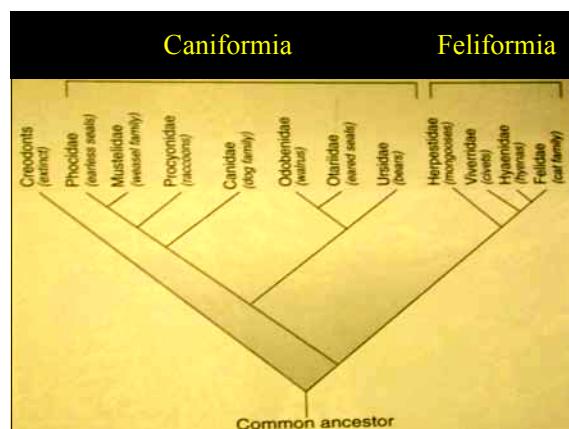
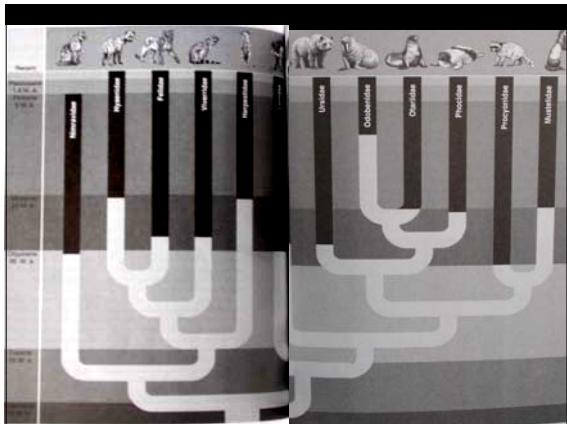


FIG. 3. — Dentitions supérieure et inférieure d'un Créodonte (*Oxyæna*). Ici, les carnassières (en grisé) correspondent à la première molaire supérieure et à la deuxième molaire inférieure.



Creodonta vs. Carnivora





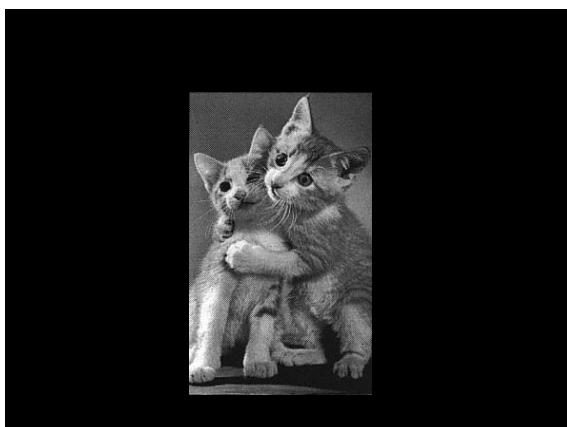
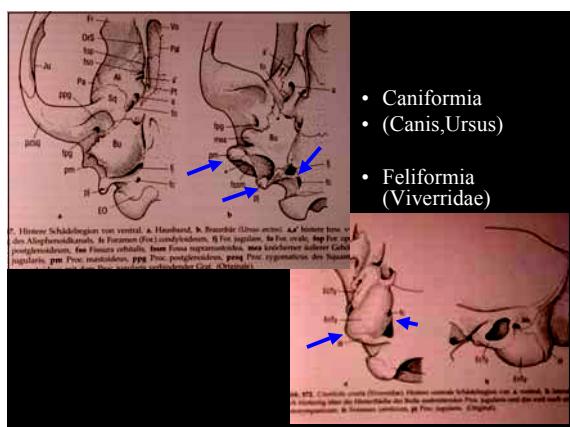
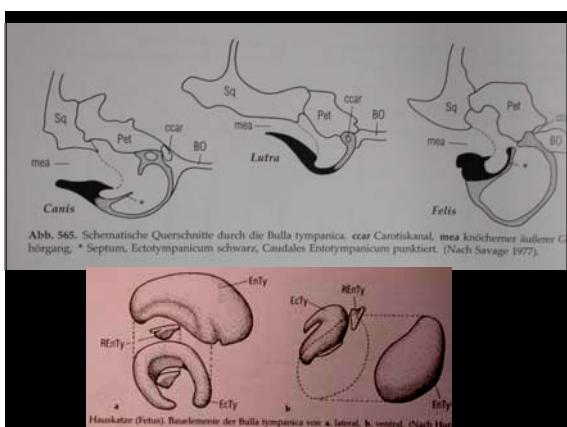
Carnivora: klasifikace

- Fissipedia**
- *Canidae*: PSOVITÍ 4 - 14
- *Ursidae*: Medvědovití 5 - 9
- *Procyonidae*: Medvidkovití 6 - 18
- *Mustelidae*: Lasicovití 25 - 65
- *Viverridae*: Cibetkovití 20 - 34
- *Hemerpestidae*: Promykovití 18 - 37
- *Hyenaidae*: Hyenovití 2 - 3
- *Proteiliidae*: Hyenkovití 1 - 1
- *Felidae*: Kočkovití 18 - 36

- Pinnipedia**, „Ploutuvonožci“
- *Otaridae*: Lachtanovití 7 - 14
- *Odobenidae*: Mrožovití 1 - 1
- *Phocidae*: Tuleňovití 10 - 19

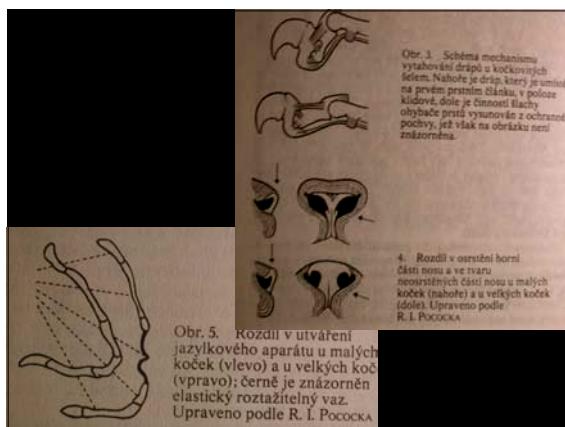
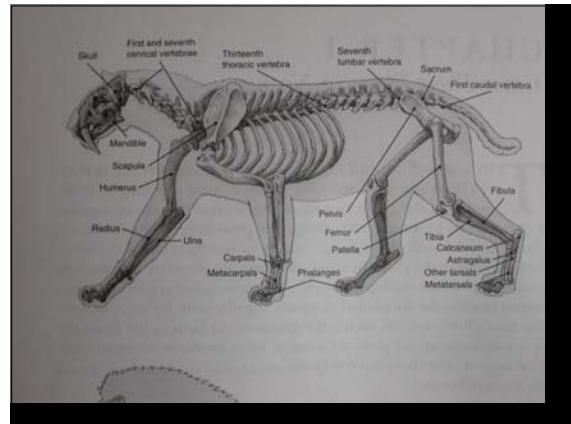
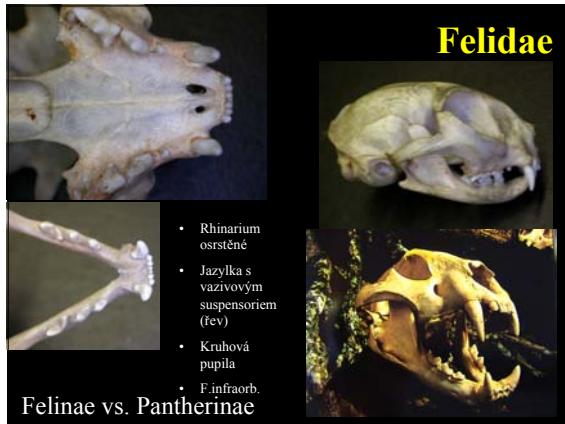
- **WR 2005** 126 286
- Feliformia**
- *Felidae* 14 40
- *Viverridae* 15 35
- *Eupleridae* 7 8
- *Nandiniidae* 1 1
- *Herpestidae* 14 33
- *Hyenaidae* 3 4

- Caniformia**
- *Canidae* 13 35
- *Ursidae* 5 8
- *Otaridae* 7 16
- *Odobenidae* 1 1
- *Phocidae* 13 19
- *Mustelidae* 22 59
- *Mephitidae* 4 12
- *Procyonidae* 6 14
- *Ailuridae* 1 1

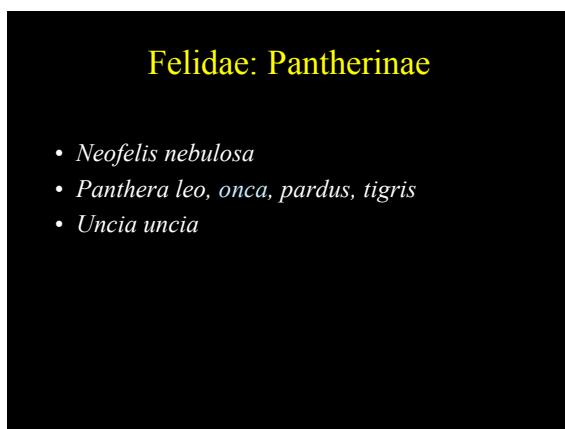


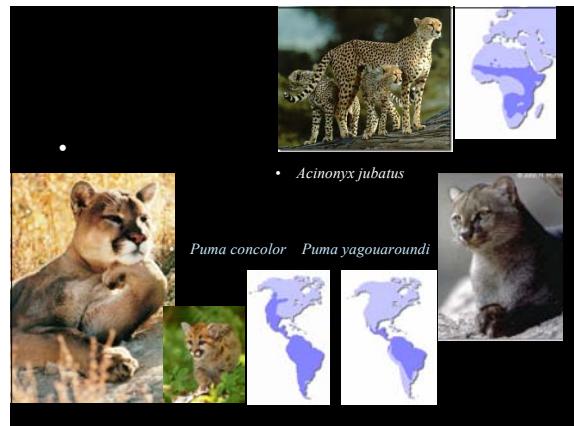
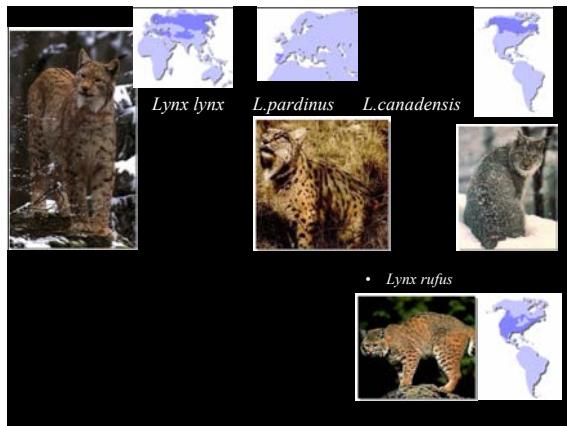
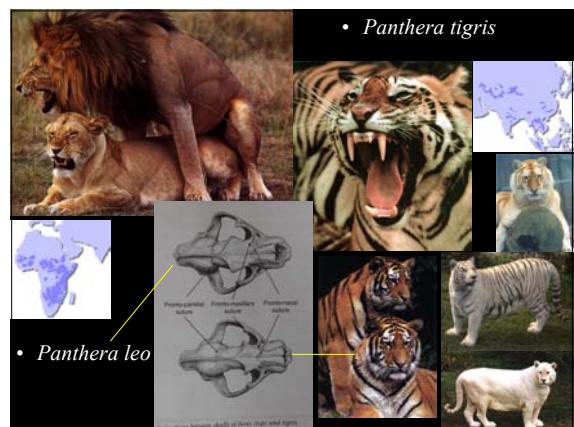
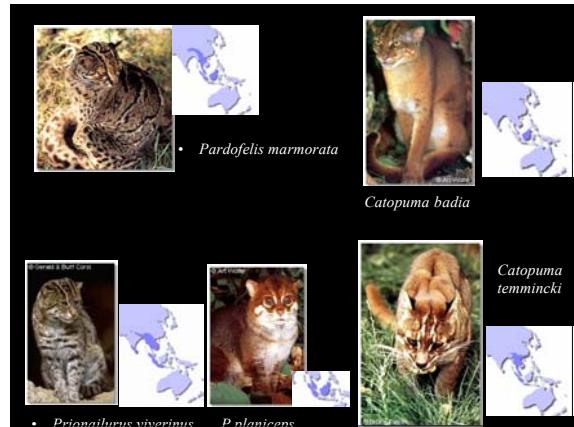
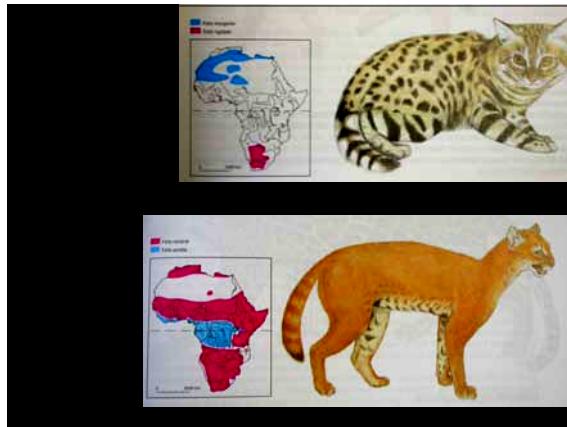
Feliformia: 121 spp. 54 g. 6 f.

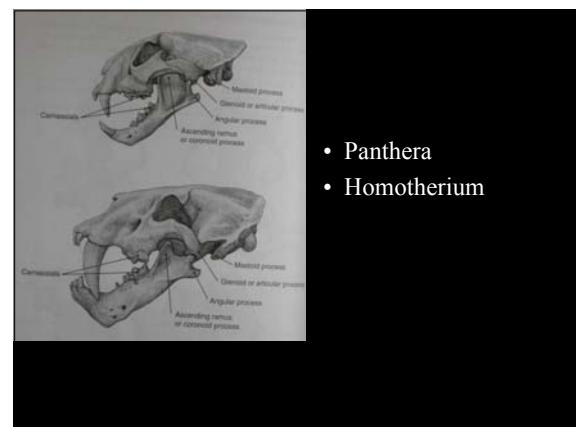
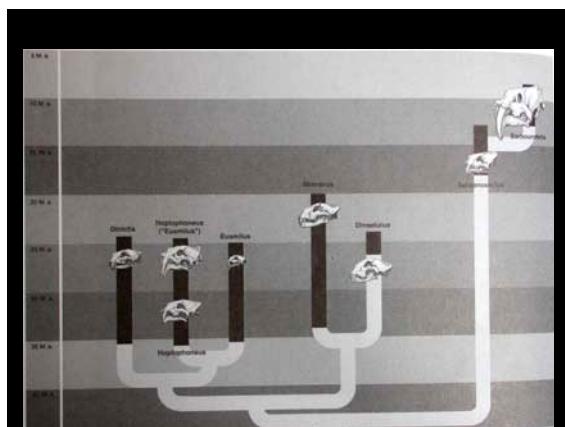
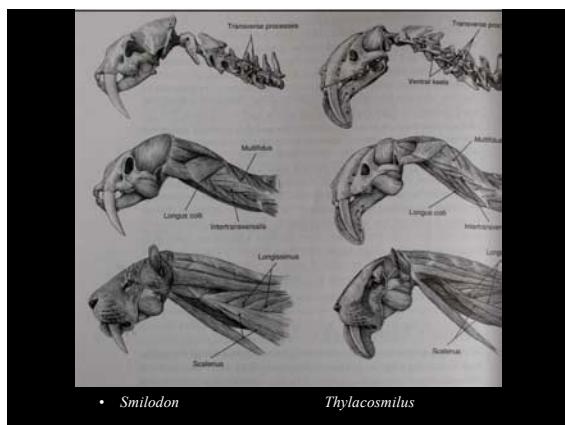
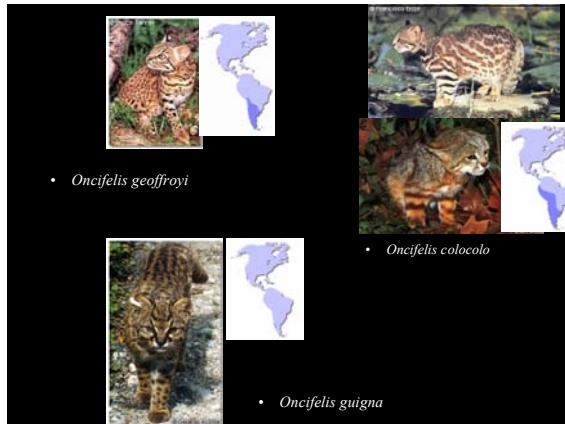
- Bulla rozdělena bilaminárním septem (ekto+entotympanicum) na dva oddíly
 - P4/ s výrazným parastylem - zub je tříhrotý
 - M3/ a M3/ chybí
 - Baculum malé či chybí
 - M2/ zcela redukována či chybí (u Felidae a Hyenaenidae)
 - Cowperovy žlázy dobré vyvinutý
 - Prostata velká, dvoulaloková
 - Kopulace krátké a časté

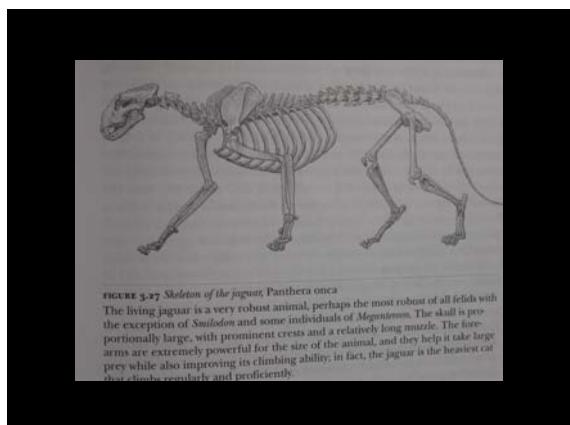
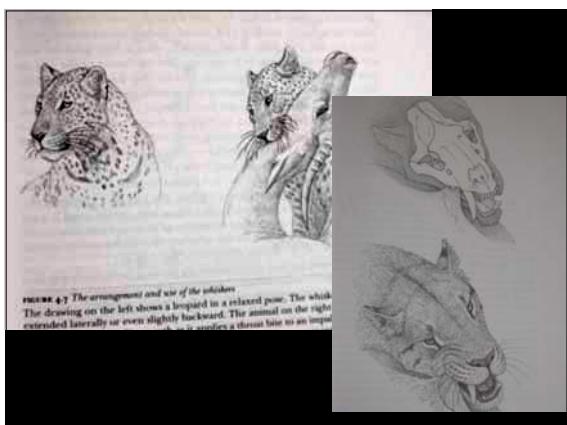
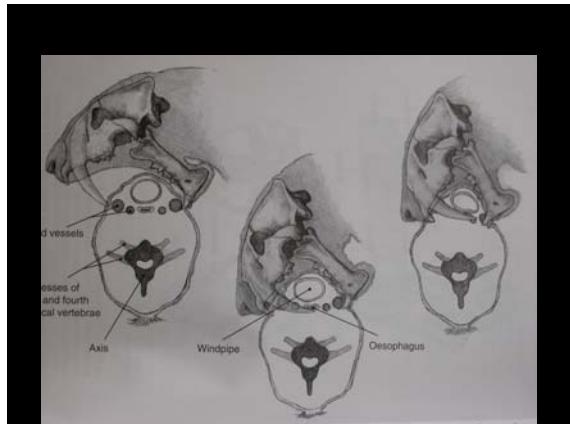
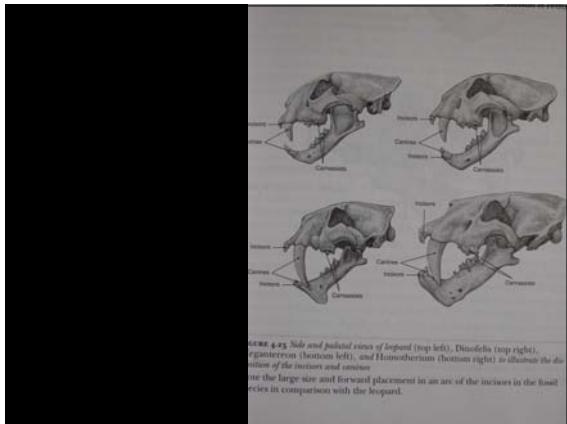


- Felidae: Felinae**
- Acinonyx jubatus*
 - Caracal caracal*
 - Catopuma badia, temminckii*
 - Felis bieti, catus, chaus, manul, margarita, nigripes, silvestris*
 - Leopardus braccatus, colocolo, geoffroyi, guigna, jacobitus, pajeros, pardalis, tigrinus, wiedii*
 - Leptailurus serval*
 - Lynx canadensis, lynx, pardinus, rufus*
 - Pardofelis marmorata* (inc.sedis - rel. k Pantherinae)
 - Prionailurus bengalensis, iriomotensis, planiceps, rubiginosus, viverrinus*
 - Profelis aurata*
 - Puma concolor, yagouaroundi* (sister to *Acinonyx*)





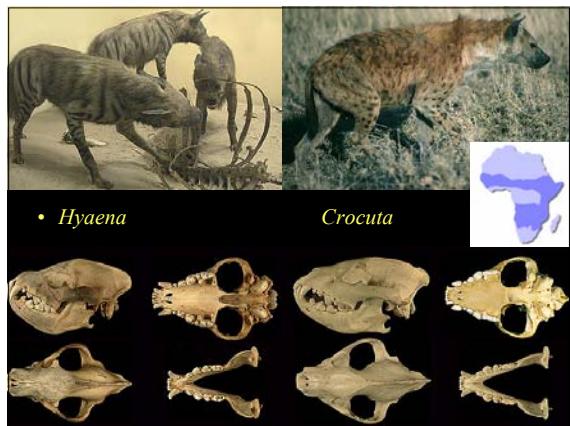




Hyaenidae - hyenovití

3 g. 4 spp. Rec. Af., fosilní – Af-Eu-As, typ stavba těla (kratší zadní konč., absence bakula, mohutné perianální žlázy, bullae feliformní, přepážka

- *Hyaena brunnea* — S Af
 - *Hyaena hyaena* — Af, Arabie, stře. Asie, E-Indie



Hyaenidae

- *Proteles cristatus*
Monogamní, noční,
termiti, 7-14 kg



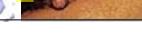
Viverridae - cibetky

- *Genetta tigrina* (ženetka)
skvrnitá



Viverridae: Paradoxurinae

- *Arctitis binturong*
- *Arctogalidia trivirgata*
- *Macrogalidia musschenbroecki* (Celebes)
- *Paguma larvata*
- *Paradoxurus hermaphroditus jerdoni, zeylonensis*



Viverridae: Hemigalinae

- *Chrotogale owstoni*
- *Cynogale bennettii*
- *Diplogale hosei*
- *Hemigalus derbyanus*



Viverridae: Prionodontinae

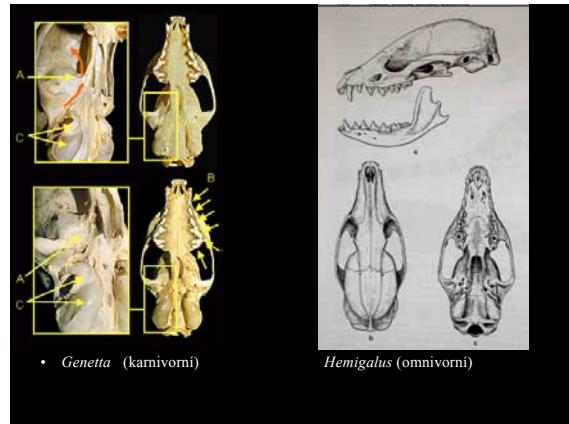
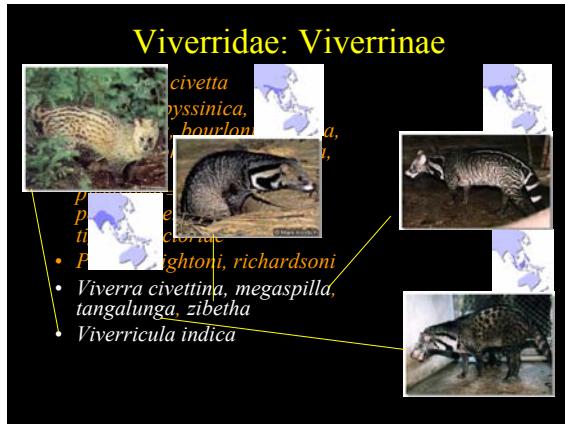
- *Prionodon linsang, pardicolor*



Viverridae: Viverrinae

- *Civettictis civetta*
- *Genetta abyssinica, angolensis, bourloni, cristata, genetta, johnstoni, maculata, pardina, piscivora(=Osbornictis), poensis, servalian, thierryi, tigrina, victoriae*
- *Poiana leightoni, richardsoni*
- *Viverra civettina, megaspilla, tigra, zibetha*





Nandinidae - nandinie

- outplesiomorfie (stavba bullae), molekul.data
- Monotypická (? rel. Paradoxurinae)
 - *Nandinia binotata*

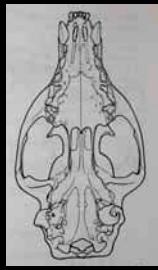


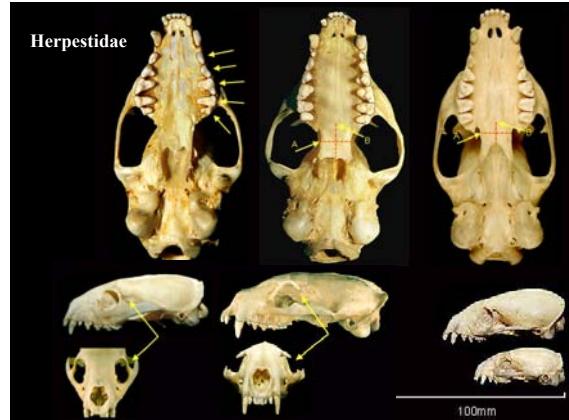
Table 15.1. Morphological characteristics differentiating herpestids (mongooses) from closely related viverrids (civets and genets)

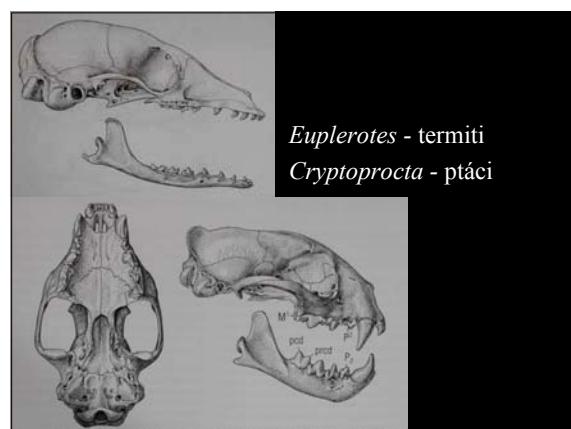
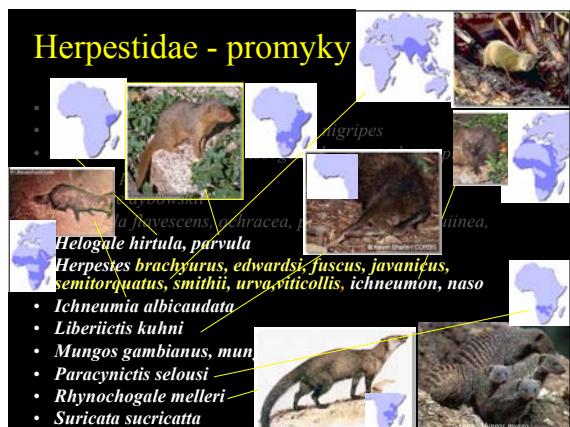
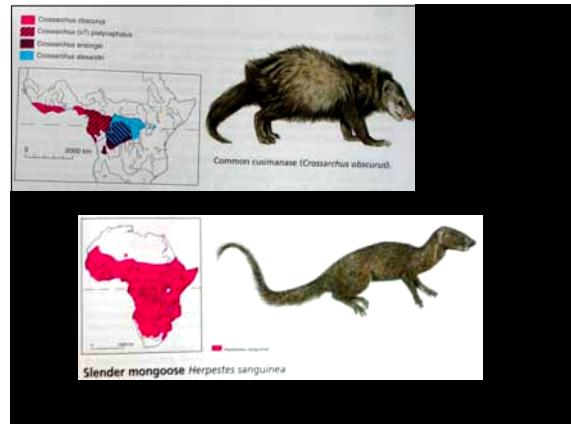
	Herpestidae (mongooses)	Viverridae (civets and genets)
Tail length	Less than head and body length	Equal to or greater than head and body length
Digits	Four or five; webbing reduced or absent	Five; webbing between toes
Claws	Nonretractile	Retractile
Ears	Short and round; no bursae (pockets) on lateral margins	Long and pointed; bursae on lateral margins
Pelage	Usually uniform coloration	Usually spotted or striped
Behavior	Social, often forms groups; diurnal or nocturnal; terrestrial	Generally solitary; nocturnal; arboreal

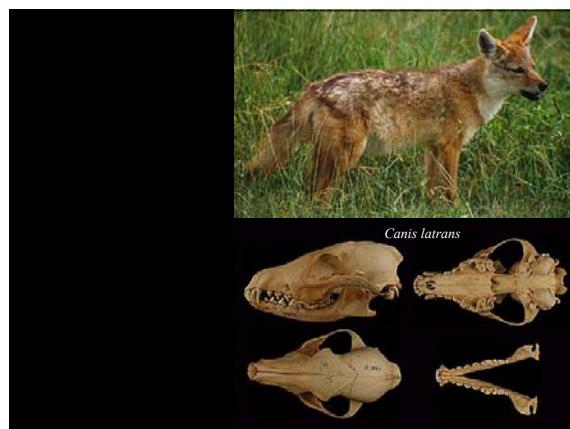
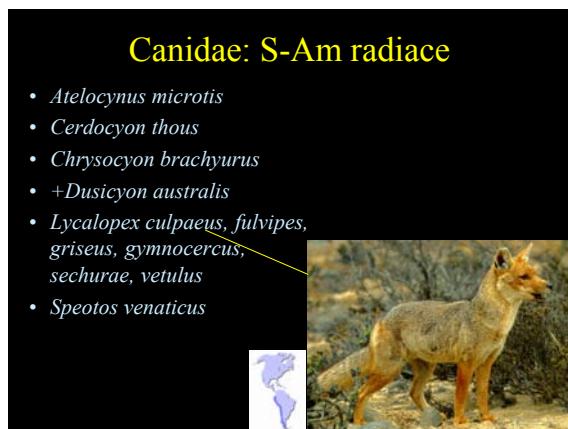
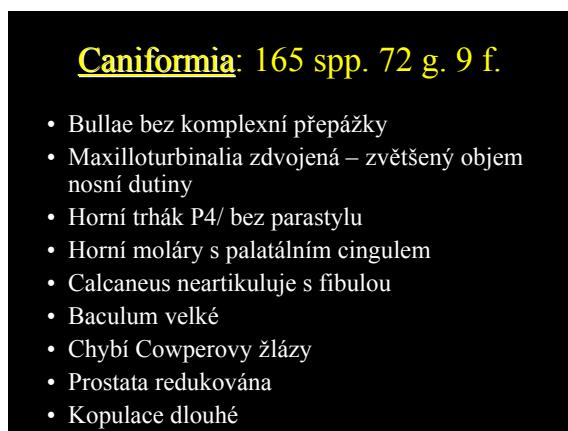
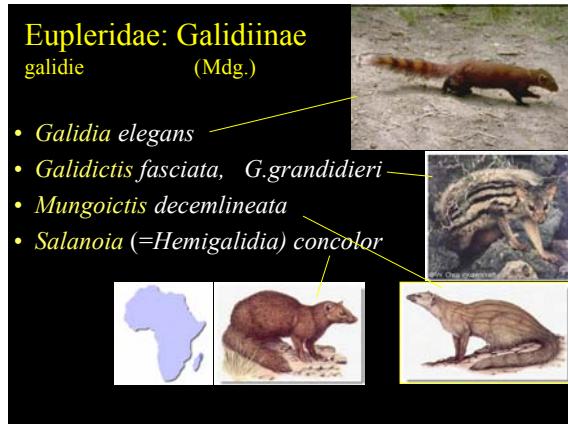
Herpestidae - promykovití

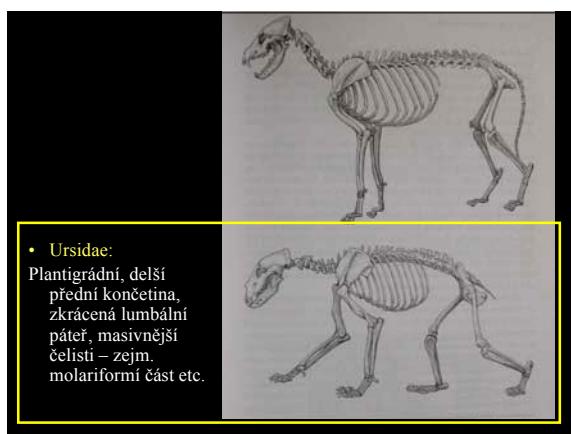
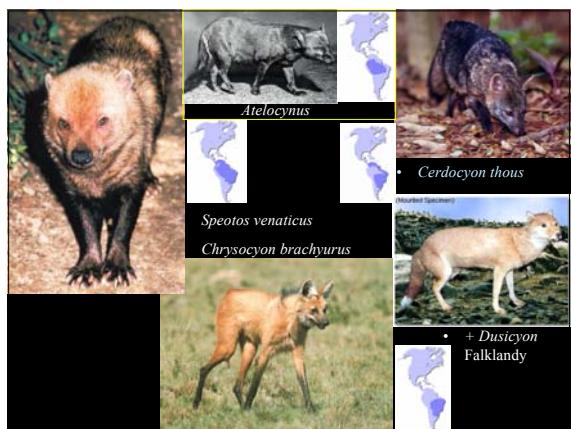
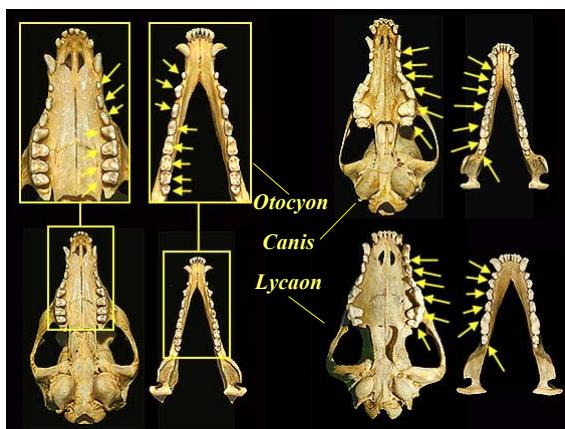
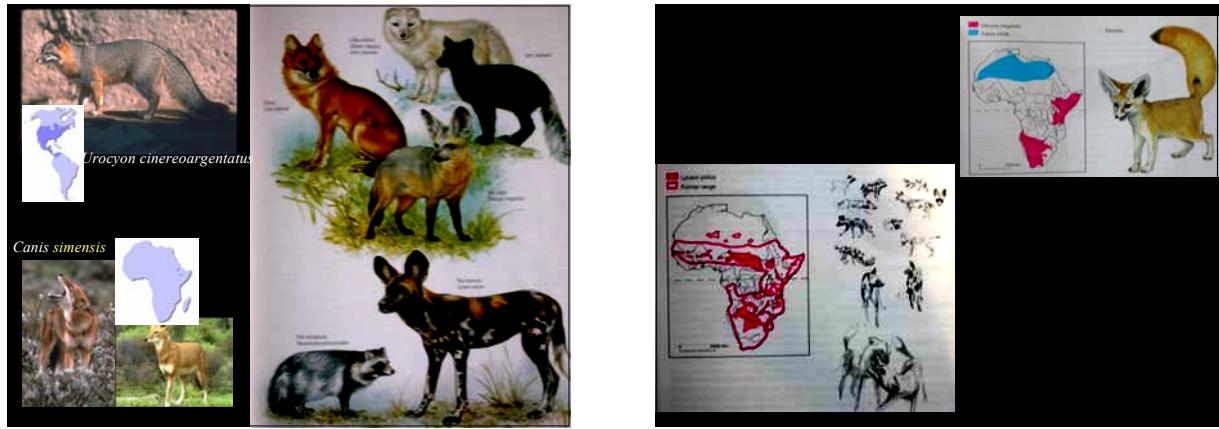
- *Atilax paludinosus*
- *Bdelogale crassicaudata*, *jacksoni*, *nigriceps*
- *Crossarchus alexandri*, *ansorgei*, *obscurus*, *platycephalus*
- *Cynictis penicillata*
- *Dologale dybowskii*
- *Galarella flavescens*, *ochracea*, *pulverulenta*, *sanguinea*,
- *Helogale hirtula*, *parvula*
- *Herpestes brachyurus*, *edwardsi*, *fuscus*, *javanicus*, *semitorqueatus*, *smithii*, *urva*, *vitticollis*, *ichneumon*, *naso*
- *Ichneumia albicaudata*
- *Liberictis kuhni*
- *Mungos gambianus*, *mungo*
- *Paracynictis selousi*
- *Rhynochogale melleri*
- *Suricata suricatta*

• Afrika, S-SE Asie

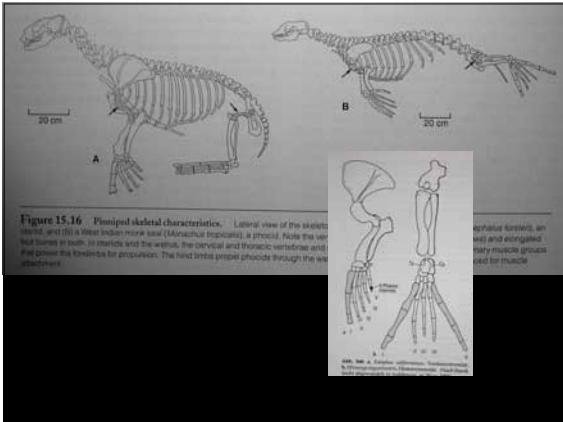






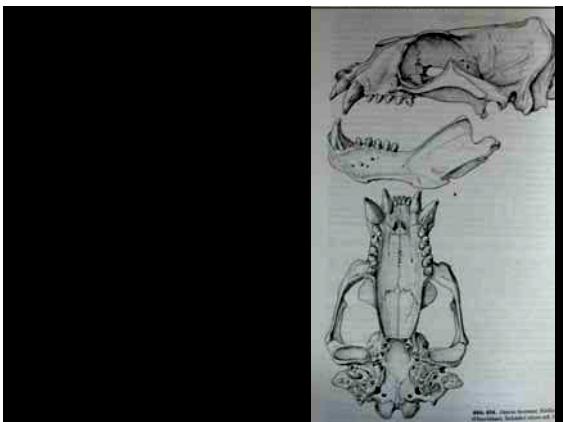




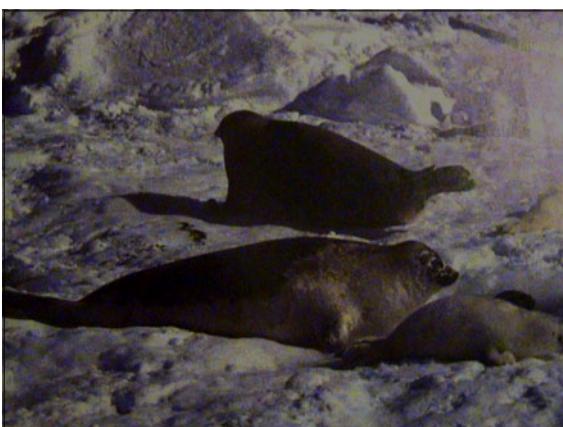


Otariidae

- *Arctocephalus australis, forsteri, galapagoensis, gazella, philippii, pusillus, tropicalis*
- *Callorhinus ursinus*
- *Eumetopias jubatus*
- *Neophoca cinerea*
- *Otaria flavescens*
- *Phocarcetus hookeri*
- *Zalophus californianus, japonicus (+), wollebaeki* (Galapagos)



	Phocidae (earless seals)	Odobenidae (walrus)	Otariidae (fur seals/sealions)
External pinnae	No	No	Yes
Testes	Abdominal	Abdominal	Scrotal
Tip of tongue notched	Yes	No	Yes
Hind limbs rotate forward	No	Yes	Yes
Guard hairs with medulla	No	No	Yes
Underfur	Essentially absent	Essentially absent	Present in sea lions
Alisphenoid canal	Absent	Present	Present
Auditory bullae	Inflated	Small and flattened	Small and flattened
Transverse groove on upper incisors	No	No	Yes
Lower incisors present	Yes	No	Yes
Total number of teeth	26-36	18-24	34-38
Fused symphysis of lower jaw	No	Yes	No
Postorbital process	Absent	Absent	Present
Chromosome number	32-34	32	36



- *Cystophora cristata*
- *Erignathus barbatus*
- *Halichoerus grypus*
- *Histriophoca fasciata*
- *Hydruga leptonyx*
- *Leptonychotes weddellii*
- *Lobodon carcinophaga*
- *Mirounga angustirostris* (Calif.), *leontina* (South)
- *Monachus monachus* (Med-WAf), *schauinslandi* (Havaj), *tropicalis* (Atl Sam)
- *Ommatophoca rossii*
- *Pagophilus groenlandicus*
- *Phoca largha* (N Pac.), *vitulina* (N oc)
- *Pusa hispida*, *caspica*, *sibirica*

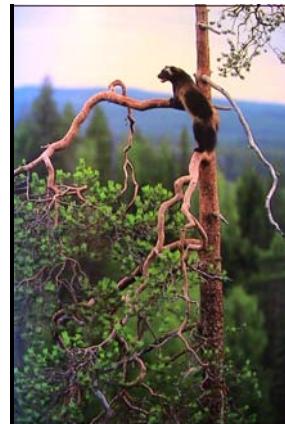


Phocidae



Odobaenidae

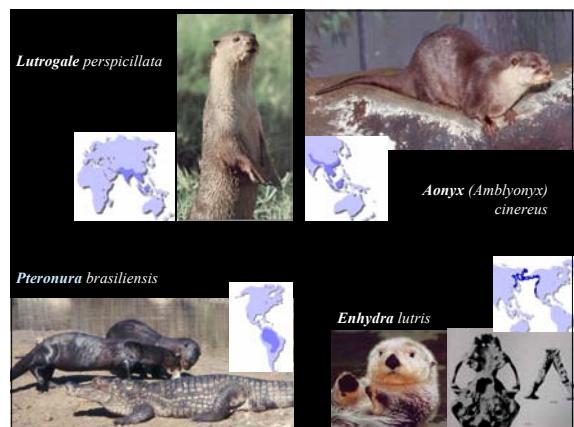
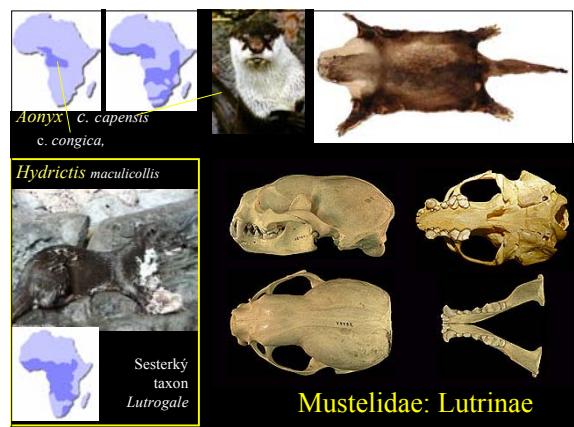
Odobaenus rosmarus



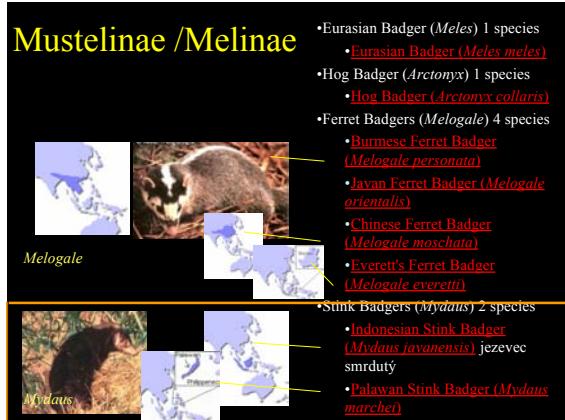
Mustelidae

- Subfamily: *Lutrinae* (vydry) [13 species]
- *Mustelinae* s.l. - všichni ostatní - tj.:
- Subfamily: *Melesinae* (Eurasian Badgers) [8 species]
- Subfamily: *Mellivorainge* (Honey Badger) [1 species]
- Subfamily: *Mustelinae* (Weasels, ferrets, martens, wolverine, tayra, grison) [33 species]
- Subfamily: *Taxidiinae* (North American badger) [1 species]
- Subfamily: *Mephitisinae* (Skunks) [10 species] – nyní samostatná čeleď!





Mustelinae /Melinae

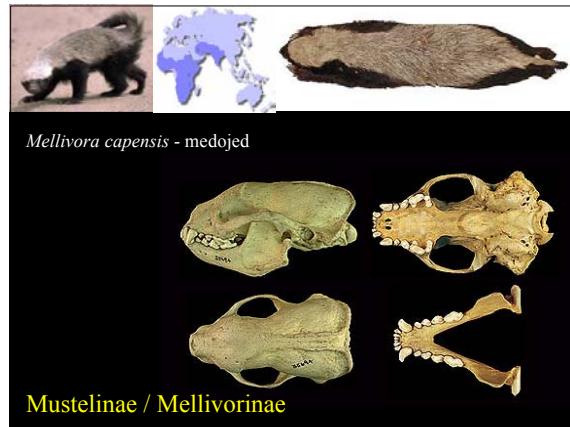


Mustelinae

- *Eira barbara* – hyrare SAm
- *Lyncodon patagonicus* – grizon patagonský
- *Galictis vittata* – grizon velký, *G. cuja* SAm
- *Ictonyx* – zorila: *lybica*, *striatus* (incl. *capensis*, *senegalesnis*, *giganteus* etc.)
- *Poecilogale albinucha* – zorila páskovaná Af
- *Vormela peregusna* – tchořík skvrnitý SE Eu-Mongolsko
- *Gulo gulo* – rosomák – boreál Holoarkt po n-Calif, Pensylv.

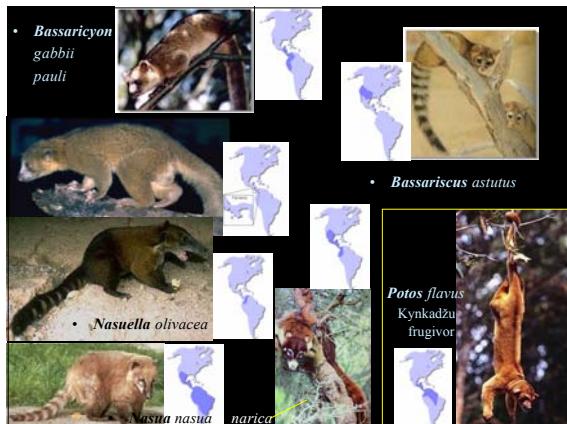
- *Martes* 8 spp. Eu (*martes, foina*) -As po Indii a Borneo (*flavigula*), Nam (*americana*, *pennati*)
- *Mustela* 17 spp. (incl. *Putorius*, *Lutreola*,
- *Neovison* – mink Nam (*vison*, *macrodon* +1894)





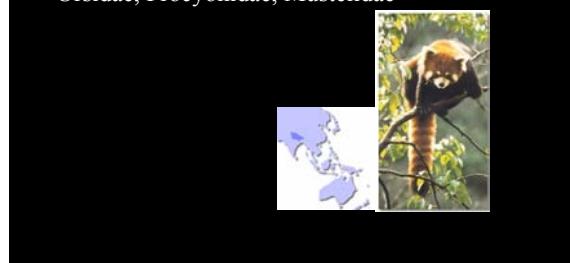
Procyonidae - myvalovití

- Bassaricyon alleni, beddardi, gabbii, lasius, pauli*
- Bassariscus astutus, semichrasto*
- Nasua narica, nasua*
- Nasuella olivacea*
- Potos flavus*
- Procyon lotor, cancrivorus, pygmaeus*



Ailuridae - pandovití

- Monotypická f. *Ailurus fulgens* – vztahy k Ursidae, Procyonidae, Mustelidae

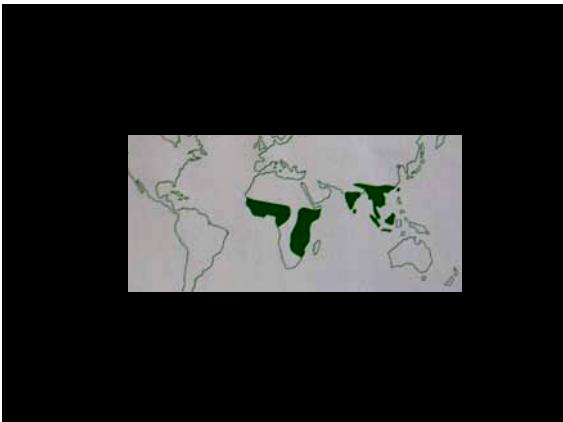
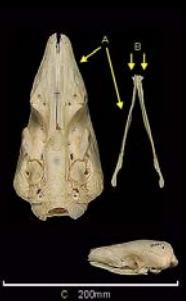


PHOLIDOTA - luskouni:

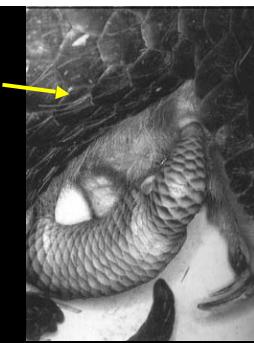
8 spp. 1 g. (*Manis*)



- LC 30-80 cm, 5-33 kg, sex dim (m větší), Pohyblivé šupiny, chlupy u asijských, bez chlupů Afr., myrmekofagie, větš noční, arboricol - ne u *M.gig.*, monogam, grav 140 d,



L. bělobřichý African tree pangolin
(*Manis tricuspidata*)



Lkrátkoocásý Chinese pangolins
(*Manis pentadactyla*), I pář
pectoral mammae



Luskoun ostrovní
(*Manis javanica*),

L.velký
(*Manis gigantea*), 30 kg,
pozemní hrabavý, nory
až 40 m, WAf

Manis

- **subgenus *Manis* Linnaeus, 1758**
 - *M. pentadactyla*, Nepal, Sikkim, Burma, northern Thailand and Indochina, southern China, Taiwan, Hainan;
 - *M. crassicaudata*, peninsular India, Sri Lanka;
- **subgenus *Paramanis* Pocock, 1924**
 - *M. javanica*, Burma, Thailand, Indochina, Malay Peninsula, Sumatra, Java, Borneo, Palawan, and many small nearby islands;
- **subgenus *Phataginus* Raffinesque, 1821**
 - *M. tricuspidata*, Senegal to western Kenya, and south to Zambia;
- **subgenus *Smutsia* Gray, 1865**
 - *M. gigantea*, Senegal to Uganda and Angola;
 - *M. temmincki*, Chad and Sudan to Namibia and South Africa;
- **subgenus *Uromanis* Pocock, 1924**
 - *M. tetradactyla*, Senegal to Uganda and Angola.

