

THE MORPHOLOGICAL PECULIARITIES OF BUDGER SKULL (*MELES MELES*)

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Abstract

The studies were performed on badger skulls prepared by removal of adjacent tissues for evidence of morphological peculiarities such as: the shape, length and development processes of the bone and specific joints. The appearance of the bony prominences demonstrates both the traction force in contraction and pressure produced by muscles on the bones, in accord with the anatomical principles. Analyzing these issues, at badger' skull ones can observe the canines which are developed, having strong root noticed by extended alveolar canine which protrude on the surface of maxillary bone. The incomplete orbital cavity is laterally delimited by the zygomatic process of the frontal and the frontal process of zygomatic bone, both being reduced and triangular. Caudo-medial (dorsal and ventral) the orbit is bounded by each high blade bone which converge toward the orbital hiatus. The ceiling of mouth looks trapezoid and narrows caudal because the layout of the last molar cross-like carnivores. The articular condyle of the temporal appears as a groove, transversely elongated, caudal flanked by the retroarticular process. The mandible has branches diverged caudally, causing widening of oropharyngeal opening and articular condyle of the mandible looks cylindrical and transverse elongated. The developed coronoid process is quadrangular and the angular process is very developed.

Key words: *badger, frontal, mandible, skull, temporal*

Introduction

Badger (*Meles meles*), also called Badger, is a plantigrade mammal which belongs to the Mustelidae family. This is one of the most famous families of the Carnivora Order together with Felidae, Ursidae and Canidae.

Mustelids are small or medium sized mammals, with slim body, tail and legs are relatively short. The head is small, with generally short snout and ears. They are mainly carnivorous, occasionally consuming and cereals, fruits, bulbs. It is a small animal with a body length of 60 to 80cm, with a tail of 15-20 cm. Even if a small animal, he is strongly built. It has a small head, short neck and thick, pear-shaped body and a short tail. The legs are short and strong claws and presents massive, elongated, non-retractable, being adapted for digging. For this purpose it is used the snout that is flexible and sinewy (Spataru M et al, 2005).

Material and method

The study was conducted on four skulls from badgers injured or killed by shooting. Study methods used to describe the morphological features of the skull at the Badger were represented by classical methods. These were boiled and scrape the adjacent tissues followed by conducting comparative measurements aiming at: the shape, length and bone and joint development of process compared to species of domestic animals. Workpieces were photographed to highlight specific morphological peculiarities.

Results and discussion

The dorsal aspect of the skull at the Badger presents rounded portion rostral nasal bones and nasal bone incisive processes have arched appearance, being longer than other carnivores.

The opening of the nasal cavities is represented by an oval hole, dorsal-ventral orientation bounded by the back of the incisive bones, nasal processes and the cranial edge of the nasal bones.

Dorsal, the nasal part of the frontal bones is plane being caudal continued with the neural portion which has a smooth surface, slightly convex, participating in the formation of temporal fossa. Lateral, the zygomatic process of frontal bone appears triangular, and from the base of the zygomatic process are detached the parietal-temporal lines that come together in the median plane at the external sagittal crest.

External sagittal crest is prominent, sharp and long, it is ended at the external occipital protuberance (Spataru M et al, 2003).

The zygomatic arches, strong detached, it is caudal continued with a blade bone which surrounds the external ear canal, extending dorsally with the nuchal ridges and ventrally with the retro-tympanum processes, thickened and highly developed than other carnivores.

The wide temporal fossa, bounded by sagittal crest, nuchal crest and dorsal edge of the zygomatic arch, gives the place a highly developed temporal muscle at the badger. In badger, the lateral aspect of skull is rectangle, whose width is 40% of the length.

Canine alveolus is highly developed and the infraorbital foramen is opened on the base of the temporal process of zygomatic bone.

The orbit is not completely completed, being incomplete defined by zygomatic process of frontal bone, and the frontal process of the zygomatic bone, detached from the dorsal edge of the temporal process of the zygomatic bone. At the medial edge of the orbit is remarkable the presence of a infratrochlear tubercle looking like a nipple, on its ventrally having two lacrimonasal openings.

The maxillar bone posterior presents a strongly developed zygomatic process, detached from maxillar surface that articulates with the zygomatic bone, bounding together with itself the presphenoid and maxillar hiatus.

The maxillar hiatus open some holes: infraorbital, aboral majorpalatine and sphenopalatină. Orbital hiatus is bordered by a thick line and long bone departing from the base of the zygomatic process of the frontal to the base of the sphenoid. Into the orbital hiatus open the ethmoid, optical opening, orbital fissure, round foramen which communicates through the alar duct with the caudal alar foramen.

External auditory canal looks like a trough having the dorsal opening flanked by a continuous bone blade which starts from the base of the zygomatic process of the temporal, posterior extended with a highly developed retrotympanic process.

Retrotympanum process exceeds the length of the occipital paracondylar processes, being dorsal-ventral and caudo-cranial oriented, dorsally continues with the nuchal crests and ventral rounded ends.

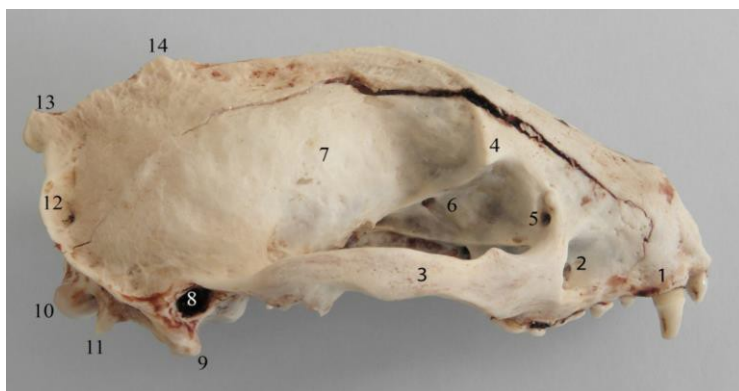


Figure no 1. The skull in badger – lateral view

1. Jugal alveolaria, 2. Foramen infraorbitale, 3. Arcus zygomaticus, 4. Processus zygomaticus ossis frontalis, 5. Foramen lacrimale, 6. Foramen ethmoidalia, 7. Fossa temporalis, 8. Porus acusticus externus, 9. Processus retroarticularis, 10. Condylus occipitalis, 11. Procesus paracondylaris, 12. Criasta temporalis, 13. Protuberantia occipitalis externa, 14. Crista sagittalis externa.



Figure no 2. The skull in badger – ventral view

1. Condylus occipitalis, 2. Procesus paracondylaris , 3. Bulla tympanica,
4. Processus jugularis, 5. Processus retroarticularis, 6. Fossa mandibularis, 7. Arcus zygomaticus,
8. Processus frontalis ossis zygomatici, 9. Fissura palatina, 10. Palatum oseum, 11. Foramen palatinum major, 12. Hamulus pterygoideus, 13. Foramen ethmoidalia, 14. Fossa pterygopalatina

Jugular foramen is antero-ventral placed to the ear canal, it is at the base of the zygomatic process of the temporal. The zygomatic arch, detached more aborally and it is widely in comparison with the dog.

Rostrally, the bodies of incisive bones have a plan aspect compared to the mandible which has a curved appearance. This thing gives the appearance of a semi-circle being formed by the upper and lower alveolar process, during lifting the mandible (Barone, R.,et al, 1973)

Mandible body is arched and the horizontal branch appears thickened and rectilinear. The body of the mandible contains incisive alveoli, highly developed being the canine alveoli and as a consequence, a reduced inter-dental space. Premolars are two in number and the molars four, on the abrasion face provided with tubers.



Figure no 3. The anterior view of the skull in badger

1. Cavum nasale, 2. Canalis interincisivus, 3. Juga alveolaria, 4. Dentes incisivi,
5. Dens caninus, 6. Processus nasalis ossis incisivus, 7. Foramen infraorbitale,
8. Arcus zygomaticus

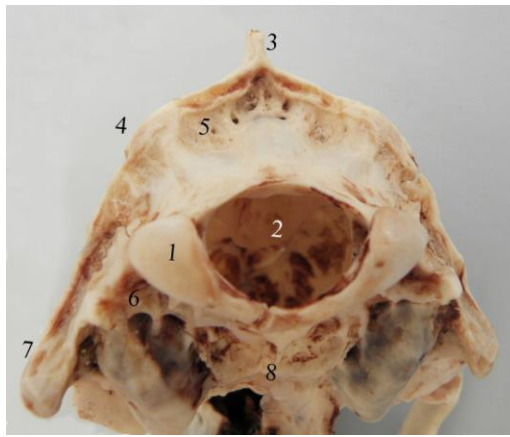


Figure no 4. The caudal view of the skull in badger

1. Condylus occipitalis, 2. Foramen magnum, 3. Protuberantia occipitalis externa, 4. Crista sagittalis externa, 5. Squama occipitalis, 6. Processus paracondylaris, 7. Processus retroarticularis, 8. Pars basilaris ossis occipitalis.

The mandible in badger

Mandible body is arched and the horizontal branch appears thickened and rectilinear. The body of the mandible contains incisive alveoli, highly developed being the canine alveoli and as a consequence, a reduced inter-dental space. Premolars are two in number and the molars four, on the abrasion face provided with tubers.

On the lateral side of the mandible, from canine to the last premolar, 2-4 large openings are present.

The two jaws are jointed to each other in the sagittal plane, through a fibrous joint, which is transformed in time in osseous joint (synostosis). Rostrally, to the base of incisive alveoli, each vascular opening is present.

The edges of the horizontal branches of the mandible have caudal divergent orientation, and lower molar dents were approximately parallel orientation.

The curved branch of the mandible presents an angular process, approximately 0.5 cm long, looking like a hook-shaped, between it and jointing condyle being a deep notch.

The jointing condyle has the appearance of half-cylinder having a length of about 2 cm and perpendicular position on the longitudinal axes.



Figure no 5. Mandible in badger, lateral view

1. Dens caninus, 2. Foramina mentalia, 3. Dens premolares, 4. Dens molares, 5. Facies buccalis partis molaris, 6. Fossa masseterica, 7. Processus coronoideus, 8. Incisura vasorum facialis, 9. Incisura mandibulae, 10. Caput mandibulae, 11. Processus angularis



Figura 6. Mandible in budger, dorsal view

1. Dentes incisivi, 2. Dens caninus, 3. Facies lingualis partis incisivae, 4. Linia mylohyoidea,
5. Dens premolares, 6. Dens molares, 7. Fossa pterygoidea, 8. Processus coronoideus,
9. Caput mandibulae

Medially and laterally from the condyles the thick and rounded bone blades are detached, which, cranially, they are continued towards the horizontal branch of the mandible. At badger, the plan of mandibular condyle articular surface is in the same height with the plate of the lower molars, as in all carnivores, as in all species which develop powerful force in mastication. The coronoid process, looking quadrangle, has the dorsal edge curved, and caudal border rectilinear, ending at the jointing surface level (Bruce D. et al., 1985)

On the lateral side of mandible, the masseter fossa is deep, being bounded by a rough ventral line interrupted by an obliquely vascular notch.

Conclusion

1. The canine alveola is highly developed and protrudes the jaw bone surface.
2. The orbit is complemented by an orbital ligament and to the cranial border it is present the infraorbital hole opening, flanked by an infratrochlear tubercle.
3. Ceiling mouth is oval, the last molars being transversally placed.
4. The articular condyle of the temporal bone is elongated in the cross, flanked by a developed retroarticular process.
5. Mandibles have divergent branches caudally, which denotes the large oropharynx opening of.
6. The articular condyle looks cylindrical and transversally elongated, the developed coronoid process is quadrangular and the angular process caudally very detached.

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