

Description of muskox remains from Polish sites

Genus: *Praeovibos* Staudinger, 1908

Praeovibos priscus (Staudinger, 1908)

Bielszowice, nowadays a district of the city Ruda Śląska [Bielszowitz] (50° 16'06.6" N, 18° 50'03.12" E). This specimen was found in sandy sediments. Skull fragment of a young male still preserving only the bases of both horn-cores. The gap between the horn-cores is relatively wide. Before WW2 it was held in the Preussischen Geologischen Landesanstalt in Berlin. At present the specimen is held in the Bundesanstalt für Geowissenschaften und Rohstoffe in Berlin. The skull was initially assigned to the genus *Ovibos* Blainville, 1816. It was depicted by Kowarzik (1912). Staudinger (1908) assigned it to *Praeovibos priscus*, whereas Soergel (1942) accommodated it in the genus *Ovibos* but without indicating any species name (Michael 1902, Kowarzik 1912, Pax 1921, Andrée 1933, Ryziewicz 1933a, 1954, 1955, Juhnke 1952, Kowalski 1959, Kurten 1968, Marciszak et al. 2018).

Genus: *Ovibos* Blainville, 1816

Ovibos moschatus (Zimmerman, 1870)

1. **Pyskowice** [Peiskretscham] (50°23'53"N, 18°37'39"E). Skull fragment (ZPALUWr/Ovm/PYS/M/1/1) without the facial part, probably belonging to an adult male, but with unfused sutures. The gap between the horn-cores is also relatively wide, wider than in other skulls from Poland. The neurocranium has well-preserved occiput and ventral region. According to Ryziewicz (1954) it was found in a sandpit in Pyskowice during WW2 or short before it (Semba et al. 2016, Marciszak et al. 2018).

2. **Grodziec**, Będzin (50°21'05"N, 19°04'11"E). Skull fragment of an adult male (ZPALUWr/Ovm/BED/M1/2), with visible sutures, comprising part of the neurocranium with horn-cores and partly damaged orbits. The bases of the horn-cores are massive. It was probably found in a sandpit in Grodziec in 1942 (Ryziewicz 1954, Kowalski 1959, Marciszak et al. 2018).

3. **Lower Silesia** (without specific locality). Skull fragment of an adult male (ZPALUWr/Ovm/M1/3). It comprises the occipital and ventral parts and a part of the right orbit. The gap between the horn-cores is wide. The tips of both horn-cores are damaged. (Ryziewicz 1954, Kowalski 1959, Semba et al. 2016, Marciszak et al. 2018).

4. **Milowice** (Sosnowiec) (50°16'36"N, 19°8'22"E). Skull fragment (ZPALUWr/Ovm/MIL/M1/4/896) belonging to a juvenile specimen. It comprises the calvaria with one orbit, and the occiput and basioccipital bone. Because of the juvenile age the horn-cores are not developed.
5. **Milowice** (Sosnowiec) (50°16'36"N, 19°8'22"E). Well-preserved skull fragment (ZPALUWr/Ovm/MIL/M1/5/1042) of an adult female. It includes the occiput with the damaged rostral edges of the orbits. The horn-cores are complete. The margins of the occiput are slightly damaged.
6. **Milowice** (Sosnowiec). Skull fragment (ZPALUWr/Ovm/MIL/M1/6/1050) of an adult male, with only part of the occiput with foramen magnum and basioccipital bone preserved.
7. **Milowice** (Sosnowiec). Skull fragment (ZPALUWr/Ovm/MIL/M1/7/1051) of a juvenile male. It has well-developed horn-cores, the gap between them is still relatively wide. It comprises the neurocranium with orbits and a part of the occiput.
8. **Milowice** (Sosnowiec). Skull fragment (ZPALUWr/Ovm/MIL/M1/8/1086) of a young specimen, formed by the calvaria with small horn-cores strongly inclined outwards. It has a relatively wide gap between the horn-cores.

The specimens from Milowice were found in a sandpit before WW2. They were held in the Muzeum Górnośląskie in Bytom. They are presently part of the collection of the Department of Palaeozoology, University of Wrocław (Ryziewicz 1933b, 1954, Kowalski 1959, Semba et al. 2016, Marciszak et al. 2018).

9. **Kamiennik** near Ziębice [Kamnig bei Münsterberg] (50°34'07"N, 17°08'53"E). Fragment of an occipital part of a skull of a young male (ZPALUWr/Ovm/KAM/M2/9) with basioccipital bone, part of the calvaria and right horn-core. It is described in the literature as „Pars cranii bovis fossilis” in the collection of F. Römer (Römer, 1874). It is the earliest known report of muskox skull in Poland (Römer 1875, Gürich 1885, Staudinger 1908, Kowarzik 1912, Pax 1921, Ryziewicz 1933a, 1954, Soergel 1942, Juhnke 1952, Kowalski 1959, Semba et al. 2016, Marciszak et al. 2018).
10. **Spławie** near Pyzdry (52°09'07.2"N, 17°38'09.6"E). The best-preserved skull from Poland, belonging to an adult male. It misses only a part of the maxilla and nasal bone. The orbits, tooth rows, palate and ventral part of the neurocranium are preserved. The horn-cores are long and robust, with only small gap between them. The base of the left horn-core is longer

than the right one, which is more massive and covers a wider part of the calvaria. (Chubur 2015). The specimen was dated (see text for details).

11. **Radziki Duże** near Brodnica (53°09'51"N, 19°16'29"E). Skull fragment with horn-cores, frontal, parietal, temporal and occipital bones, but without the occipital condyles. This specimen is a part of a collection of Parafialna Izba Pamięci (PIP) in the building of parish of St. Catherine.

12. **Chełm**, Bielawin (51°09'05"N 23°28'26"E). Skull with partly preserved palate and left P⁴ – M³ tooth row, held in the Muzeum Ziemi Chełmskiej in Chełm (MCH/G-1309). Part of the ventral region of the neurocranium, including the basioccipital bone, is preserved. The bases of the horn-cores are complete and relatively long, whereas the horn-cores themselves are broken at the height of the occipital condyles. The orbits are well-preserved.

13. **Góra Kalwaria** (51°59'05"N, 21°12'50"E). Skull fragment of a young specimen (MZ VIII Vm 1206) held in the Earth Museum of Polish Academy of Sciences in Warsaw. The left orbit is preserved, a wide gap is present between the horn-cores, the occiput comprises foramen magnum and condyles, the ventral part is missing.

14. **Warsaw** (without specific locality). Skull fragment of a young male (MZ VIII Vm 213) with well-developed bases of the horn-cores and sutures, held in the Earth Museum of Polish Academy of Sciences in Warsaw. Preserved part of the neurocranium with mildly damaged orbits, occiput and the base of the skull including the basioccipital bone. The left horn-core is broken near its base, the right one is reaching the lateral side of the occipital process.

15. **Nowy Dwór Mazowiecki** (52°25'49"N, 20°42'57"E). Small fragment of horn-core (MZ VIII Vm 1208) with half calvaria of a juvenile specimen. Currently held in the Earth Museum of Polish Academy of Sciences in Warsaw.

16. **Mrągowo** (53°51'58"N, 21°18'23"E). Skull of an adult male (Pg-92 OMO) with horn-cores, occiput and ventral region preserved. It is held in the Muzeum Przyrody, division of the Muzeum Warmii i Mazur in Olsztyn. Only the dorsal part of the orbits is preserved; the horn-cores are massive, with a small gap between them. The left horn-core is larger than the right one. The horn-cores are set high on the skull. The occiput and the base of the skull are well-preserved.

17. **Perspektywiczna Cave** (50°25'47"N, 19°47'14"E). Skull fragment of an adult male (JP W-2992) with calvaria, horn-cores, and part of the occiput with damaged foramen magnum;

ventral part not preserved. Specimen found in layer 9 of the cave infilling. The specimen was dated (see text for details). The cave is located in Udorka Valley, near the village of Poręba Dzierżna, municipality of Wolbrom, Lesser Poland Voivodeship in the area of the Kraków-Częstochowa Upland. The cave system consists of a rock shelter and two chambers. The infilling sediments range from the Lower Pleistocene to the Holocene and contain two Palaeolithic levels (Magdalenian and Epigravettian) as well as one Mesolithic level (Sudoł et al. 2013, 2016, Krajcarz et al. 2016).

18. **Biśnik Cave**, Smoleń (50°23'N, 19°40'E). Strongly damaged skull fragment (Bś W-9148) of an adult individual, still preserving calvaria and occiput. It comes from layer 2 of the Side Shelter. The specimen was dated (see text for details). Fragment of the left horn-core of a young individual from layer 7 (without inventory number). The same layer contained a part of the cervical spine: atlas, axis, C3, C4 (Bś W-251), and another cervical vertebra (Bś W-16115). Bite marks are visible on the bones. There was also a proximal phalanx in layer 2 (Bś M-195/30), a proximal phalanx fragment with no layer assigned (Bś M-271/23) and an intermediate phalanx in layer 5 at Overhang (Bś W-4740). Biśnik Cave is located in Biśnik Rock in Wodąca Valley, near Smoleń village (the Kraków-Częstochowa Upland). It comprises a system of connected chambers and rock shelters filled with sediments. Systematic archaeological and palaeontological excavations are conducted since 1991. The sediment profile consists of 20 layers. During the excavations numerous bone remains and Palaeolithic tools were found. Biśnik Cave is the oldest locality in Poland with traces of Palaeolithic colonization, from the end of the Middle Pleistocene to Holocene (? MIS 9 – MIS 1), known to date. It provided evidence of 23 levels of colonization, ranging from the Middle Palaeolithic to the Middle Ages (Cyrek 2002, 2009, 2013, Cyrek et al. 2009, 2010, 2012, Sudoł et al. 2016). The animal remains belong to more than 160 mammalian and 200 avian taxa, ranging in time from the Mazovian Interglacial to the Holocene (Stefaniak & Marciszak 2009, Stefaniak et al. 2009, Cyrek et al. 2010, Tomek et al. 2012, Socha 2014, Stefaniak 2015).

19. **Murek Cave** (Shelter) near Mników (50°03'35"N, 19°43'14"E). Skull of a juvenile specimen, with only the calvaria with horn-cores and the caudal margin of the left orbit preserved (ISEZ MF/7130). It was found in a small cave (rock shelter), located ca. 30 meters above the bottom Sanka river Valley. The cave was examined by G. Ossowski in 1881 (Ossowski 1883, Ryziewicz 1954, Kowalski 1959) and the skull by Kowarzik (1912).

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