**SUPPLEMENTARY MATERIAL**

**Evolution of the skull in arvicoline cricetids (Rodentia) according to 3D morphometric insights: Part 1. Morphological disparity of the palato-spheno-pterygoid complex**

Authors: Leonid L. Voyta, Daniel A. Melnikov

**Tables**

**Table S1**. Information on samples analyzed (3D model dataset).

Specimens are given in alphabetical order (genus/species; except *Clethrionomys*). *Key*: **ad1**, mature individual (stage 1); **ad2**, mature individual (stage 2); **f**, female; **m**, male; **sad**, immature individual; **ZIN**, the Zoological Institute of the Russian academy of sciences, St. Petersburg, Russia; **\***, the "Locality" section contains the geographical information and the date of the capture in parentheses; **\*\***, tissue ID of the Laboratory of Evolutionary Genomics and Palaeogenomics of the ZIN (square parentheses); for *Lasiopodomys raddei* the GenBank ID according to Petrova et al. (2023; <https://www.mdpi.com/1424-2818/15/3/439> ) is also proposed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| nn | Specimen | Species | Sex/Age | Locality\* |
| 1 | ZIN 16897 | *Agricola agrestis* | m/ad2 | Kazyrsug river, a right tributary of the Yenisey river, Krasnoyarskii Kray, Russia (22.04.1918). |
| 2 | ZIN 89132 | *Agricola agrestis* | m/ad1 | Shevinskaya village, Kovrov Dist., Vladimirskaya Oblast, Russia (19.08.2004). |
| 3 | ZIN 97312 | *Agricola agrestis* | f/ad1 | Zelenyi Cape [Mysok], Kandalaksha Gulf, Murmanskaya Oblast, Russia (13.09.2004). |
| 4 | ZIN 98482 | *Agricola agrestis* | ?/ad1 | Pervukha village vicinity, Katav-Ivanovsk Dist., Cheliabinskaya Oblast, Russia (21-23.08.2007). |
| 5 | ZIN 83881 | *Alexandromys fortis* | f/ad2 | 4 km west of Murtoy village, on the western shore of Lake Gusinoe, Selenga Dist., Buryatia, Russia (30.08.1998). |
| 6 | ZIN 105505 | *Alexandromys fortis* | m/ad1 | 2 km north-east of Vinogradovka village, Anuchin Dist., Primorskii Kray, Russia (06.08.2019). |
| 7 | ZIN 101018 | *Alexandromys middendorffii* | f/sad | Railway station “14 km”, Priuralsk Distr., Yamalo-Nenets Autonomous Okrug, Russia (27.07.2012). |
| 8 | ZIN 66013 | *Alexandromys oeconomus* | m/ad2 | Kendyrlik river, Zaysan Basin, East Kazakhstan Region, Kazakhstan (29.08.1978). |
| 9 | ZIN 89161 | *Alexandromys oeconomus* | f/ad1 | Filippovka village, Kovrov Dist., Vladimirskaya Oblast, Russia (22.08.2004). |
| 10 | ZIN 96546 | *Alexandromys oeconomus* | f/ad1 | Ungra river, 150 km north of Nerungri Town, Yakutia, Russia. |
| 11 | ZIN 98883 | *Alexandromys oeconomus* | m/sad | Tute river (middle part), ca. 8 km south of Kuray village, Kosh-Agatch Dist., Altay Republik, Russia (15.07.2008). |
| 12 | ZIN 100612 | *Alexandromys oeconomus* | f/ad2 | Sulban river, Kalar Dist., Zabaikalskii Kray, Russia (20.07.2005). |
| 13 | ZIN 101023 | *Alexandromys oeconomus* | f/ad2 | Railway station “14 km”, Priuralsk Distr., Yamalo-Nenets Autonomous Okrug, Russia (26.07.2012). |
| 14 | ZIN 77405 | *Alticola argentatus* | m/ad2 | Anzob mountain pass, northwest of Dushanbe City, Tajikistan (30.08.1989). |
| 15 | ZIN 77458 | *Alticola argentatus* | m/sad | Sarez Lake, Gorno-Badakhshan Autonomous Region of Tajikistan (07.08.1989). |
| 16 | ZIN 77464 | *Alticola argentatus* | f/ad1 | Sarez Lake, Gorno-Badakhshan Autonomous Region of Tajikistan (04.08.1989). |
| 17 | ZIN 77489 | *Alticola argentatus* | ?/ad1 | Sarez Lake, Gorno-Badakhshan Autonomous Region of Tajikistan (06.08.1989). |
| 18 | ZIN 101796 [3929]\*\* | *Alticola lemminus* | m/ad1 | Nizhneangarskii Ridge, 10 km north of Angoya railway station, Severobaikalsk Dist., Buryatia, Russia (08.08.2013). |
| 19 | ZIN 101797 [3936] | *Alticola lemminus* | m/ad1 | Severo-Muyskii Ridge, near of Angarakan railway station, Severobaikalsk Dist., Buryatia, Russia (11.08.2013). |
| 20 | ZIN 102289 | *Alticola macrotis* | m/ad1 | Sokhondinskii Nature Reserve, Kyra Dist., Zabaikalskii Kray, Russia (30.08.1994). |
| 21 | ZIN 102307 | *Alticola macrotis* | m/ad1 | Sokhondinskii Nature Reserve, Kyra Dist., Zabaikalskii Kray, Russia (22.07.1981). |
| 22 | ZIN 99351 [2473] | *Alticola macrotis* | f/ad2 | 22 km east of Uyuk village, Biy-Khem river, Piy-Khem Dist., Tuva Republic, Russia (06.09.2009). |
| 23 | ZIN 107067 [5761] | *Alticola semicanus* | m/ad1 | 8 km north-west of Shara-Nuur Lake, Erzinsk Dist., Tuva Republic, Russia (08.08.2021). |
| 24 | ZIN 107068 [5769] | *Alticola semicanus* | /ad2 | 8 km north-west of Shara-Nuur Lake, Erzinsk Dist., Tuva Republic, Russia (08.08.2021). |
| 25 | ZIN 10034 | *Arvicola amphibius* | ?/sad | Krymskaya railway station, Krasnodarskii Kray, Russia (1912). |
| 26 | ZIN 16365 | *Arvicola amphibius* | m/ad2 | Pokrovka village, Miyakinsk Dist., Bashkortostan, Russia (07.06.1927). |
| 27 | ZIN 45399 | *Arvicola amphibius* | m/ad1 | *Label text is illegible*; (18.09.1913). |
| 28 | ZIN 70703 | *Chionomys nivalis* | f/ad2 | Switzerland (from Peter Fogel). |
| 29 | ZIN 71279 | *Chionomys nivalis* | ?/ad1 | Dushak Mount, Central Kopet-Dag, Ahal Region, Turkmenistan (21.05.1985). |
| 30 | ZIN 106369 | *Chionomys nivalis* | m/ad1 | Alam-Kukh Ridge, North Iran (27.06.2017). |
| 31 | ZIN 102929 | *Craseomys rufocanus* | m/ad1 | Sokhondo Rock, Sokhondinskii Nature Reserve, Kyra Dist., Zabaikalskii Kray, Russia (28.08.2014). |
| 32 | ZIN 81169 | *Dicrostonyx torquatus* | m/ad2 | Sedotyakha (Sedoyakha) river, North-West Yamal, Yamalo-Nenets Autonomous Okrug, Russia (19.06.1994). |
| 33 | ZIN 81254 | *Dicrostonyx torquatus* | f/ad1 | *ibid*. (28.06.1994). |
| 34 | ZIN 81552 | *Dicrostonyx torquatus* | m/ad1 | Krestovii cape, North-East Taymyr, Krasnoyarskii Kray, Russia (01.07.1994). |
| 35 | ZIN 34835 | *Dinaromys bogdanovi* | ?/ | “Mts Hercegovina” (29.08.1947); incoming number 275-1949. |
| 36 | ZIN 34887 | *Dinaromys bogdanovi* | m/ | Incoming number 275-1949. |
| 37 | ZIN 26607 | *Ellobius lutescens* | ?/ad1 | Okhtchabert (Vokhtchaberd) village, Kotayk Province, Armenia (17.04.1948). |
| 38 | ZIN 83708 | *Ellobius lutescens* | f/ad1 | Sarab Talkh locality, 35 km north-east of Khoramabad Town, Loristan Province, Iran (25.11.1997). |
| 39 | ZIN 85284 | *Ellobius lutescens* | f/ad2 | Vokhtchaberd village, Kotayk Province, Armenia (10.1976). |
| 40 | ZIN 85287 | *Ellobius lutescens* | ?/sad | Karovaz locality, Lenkaran Dist., Azerbaijan. |
| 41 | ZIN 11763 | *Ellobius talpinus* | ?/ad1 | Merv Ancient Town vicinity, Mary Region, Turkmenistan. |
| 42 | ZIN 35828 | *Ellobius talpinus* | m/sad | West Kazakhstan (19.08.1949). |
| 43 | ZIN 82955 | *Ellobius talpinus* | f/ad1 | Malyi Sedyak village, Bizhbulyaksky Dist., Bashkortostan, Russia (15.06.1997). |
| 44 | ZIN 84395 | *Ellobius talpinus* | m/ad1 | Turkmenistan (13.03.1983). |
| 45 | ZIN 102342 | *Ellobius talpinus* | m/ad1 | Shchuchinsk City vicinity, Burabay Dist., Kazakhstan (07.10.1961). |
| 46 | ZIN 29170 | *Lagurus lagurus* | f/ad2 | 40 km up of the Abakan river mouth, Khakassia, Russia (09.08.1932). |
| 47 | ZIN 57188 | *Lagurus lagurus* | ?/sad | Zaysan Basin, East Kazakhstan Region, Kazakhstan (11.09.1970). |
| 48 | ZIN 82110 | *Lasiopodomys brandtii* | m/ad1 | Zun-Torey lake, Borzia Dist., Zabaikalskii Kray, Russia (11.07.1995). |
| 49 | ZIN 82114 | *Lasiopodomys brandtii* | ?/ad2 | Zun-Torey lake, Borzia Dist., Zabaikalskii Kray, Russia (19.07.1995). |
| 50 | ZIN 15332 | *Lasiopodomys gregalis* | ?/sad | Khangalassky Dist. (East- Khangalassky), Yakutia, Russia (28.06.1925). |
| 51 | ZIN 53120 | *Lasiopodomys gregalis* | f/ad2 | ‘Minusinskii uezd’ (Krasnoyarskii Kray, Russia). |
| 52 | ZIN 96293 | *Lasiopodomys gregalis* | m/ad1 | Yerkutayakha river, Yamalskii Dist., Yamalo-Nenets Autonomous Okrug, Russia (16.07.2006). |
| 53 | ZIN 103094 | *Lasiopodomys gregalis* | ?/ad2 | Arshanovo village, Altay Dist., Khakassia, Russia (09.2015). |
| 54 | ZIN 78327 | *Lasiopodomys mandarinus* | f/ad1 | Sosnovka village vicinity, Selenga Dist., Buryatia, Russia (1992). |
| 55 | ZIN 78614 | *Lasiopodomys mandarinus* | m/ad1 | Torm lake vicinity, Selenga Dist., Buryatia, Russia (10.07.1992). |
| 56 | ZIN 101665 [3959/KJ192314] | *Lasiopodomys raddei* | ?/ad1 | Adon-Chelon locality, Borzia Dist., Zabaikalskii Kray, Russia (19.08.2013). |
| 57 | ZIN 105338 | *Lasiopodomys raddei* | f/sad | Butyvken lake, 9 km south-east of Kubukhay village, Onon Dist., Zabaikalskii Kray, Russia (30.06.2016). |
| 58 | ZIN 105341 [4743/OP765416] | *Lasiopodomys raddei* | f/ad2 | Uldza river, 8 km west of the mouth at Duro-Nur lake, Dornod Aimag, Mongolia (28.07.2016). |
| 59 | ZIN 105344 [4746/OP765410] | *Lasiopodomys raddei* | f/sad | Elon-Obot Mount, Dornod Aimag, Mongolia (14.08.2016). |
| 60 | ZIN 64159 | *Lemmus sibiricus* | m/ad2 | Tareya village on the Piasina river, Taymyr, Krasnoyarskii Kray, Russia (15.08.1976). |
| 61 | ZIN 81239 | *Lemmus sibiricus* | f/ad2 | Sedotyakha (Sedoyakha) river, North-West Yamal, Yamalo-Nenets Autonomous Okrug, Russia (19.06.1994). |
| 62 | ZIN 81241 | *Lemmus sibiricus* | m/ad2 | *ibid*. (19.06.1994). |
| 63 | ZIN 19431 | *Microtus arvalis* | m/ad2 | Pushkin City vicinity, Leningradskaya Oblast, Russia (13.01.1971). |
| 64 | ZIN 56750 | *Microtus arvalis* | m/ad2 | Minsk City vicinity (09.07.1928). |
| 65 | ZIN 78436 | *Mynomes miurus* | m/ad2 | Upper Susitna river, Alaska, USA (09.08.1981). |
| 66 | ZIN 40410 | *Mynomes ochrogaster* | m/ad2 | Box Elder Creek at Highway 87, Montana, USA (29.03.1958). |
| 67 | ZIN 39888 | *Mynomes pennsylvanicus* | f/ad1 | Michigan State University campus, Michigan, USA (22.07.1956). |
| 68 | ZIN 74375 | *Mynomes pennsylvanicus* | m/sad | 6 km south of Ann Arbor City, Michigan, USA (15.01.1961). |
| 69 | ZIN 83753(6951) | *Mynomes pennsylvanicus* | ?/ad2 | *Label text is illegible*. |
| 70 | ZIN 40412 | *Mynomes richardsoni* | m/ad1 | Piegan Mount, Glacier National Park, Montana, USA (28.07.1949). |
| 71 | ZIN 21254 | *Clethrionomys centralis* | m/ad1 | Big Almaty Lake, 15 km south of Almaty City, Kazakhstan (20.08.1929). |
| 72 | ZIN 107137 [5832] | *Clethrionomys centralis* | ?/ad1 | Big Almaty Lake, 15 km south of Almaty City, Kazakhstan (30.09.2021). |
| 73 | ZIN 106573 | *Clethrionomys glareolus* | m/ad2 | Saint Petersburg vicinity, Russia (15.05.2007). |
| 74 | ZIN 20967 | *Clethrionomys rutilus* | m/sad | Sretensk Town vicinity, Sretensk Dist., Zabaikalskii Kray, Russia (09.10.1929). |
| 75 | ZIN 20974 | *Clethrionomys rutilus* | f/ad1 | Sretensk Town vicinity, Sretensk Dist., Zabaikalskii Kray, Russia (09.04.1929). |
| 76 | ZIN 20978 | *Clethrionomys rutilus* | ?/sad | Sretensk Town vicinity, Sretensk Dist., Zabaikalskii Kray, Russia (14.10.1929). |
| 77 | ZIN 20984 | *Clethrionomys rutilus* | f/ad2 | Sretensk Town vicinity, Sretensk Dist., Zabaikalskii Kray, Russia (04.04.1929). |
| 78 | ZIN 100554 | *Myopus schisticolor* | f/sad | Bato-Ghol vilage, Okinskii Dist., Buryatia, Russia (03.07.2011). |
| 79 | ZIN 103730 | *Myopus schisticolor* | m/ad1 | Zelenyi Cape [Mysok], Kandalaksha Gulf, Murmanskaya Oblast, Russia (19.07.2015). |
| 80 | ZIN 32560 | *Ondatra zibethicus* | m/ad1 | Yeloguy river, Krasnoyarskii Kray, Russia (28.05.1938). |
| 81 | ZIN 69584 | *Ondatra zibethicus* | ?/ad1 | Utah State, USA. |
| 82 | ZIN 84176 | *Ondatra zibethicus* | ?/ad1 | Moldavia (winter 1971–1972). |
| 83 | ZIN 31495 | *Prometheomys schaposchnikowi* | f/ad1 | Bambak Mount, Caucasus Nature Reserve, Krasnodarskii Kray, Russia (26.07.1938). |
| 84 | ZIN 74487 | *Prometheomys schaposchnikowi* | f/ad2 | 120 km of the Georgian Military Road, Georgia (20.05.1969). |
| 85 | ZIN 74969 | *Terricola subterraneus* | m/ad1 | Czech Republic (26.06.1963). |
| 86 | ZIN 80937 | *Terricola subterraneus* | f/ad2 | Forest on Vorksla Nature Reserve, Belgorodskaya Oblast, Russia (03.07.1994). |
| 87 | ZIN 84244 | *Terricola subterraneus* | m/ad1 | Czech Republic (08.05.1976). |
| 88 | ZIN 39375 | *Neotoma mexicana* | m/ad1 | Tehuantepec, Oaxaca State, Mexico (28.02.1944). |
| 89 | ZIN 39376 | *Neotoma mexicana* | m/ad2 | Tehuantepec, Oaxaca State, Mexico (05.01.1944). |
| 90 | ZIN 101697 | *Cricetulus barabensis* | f/ad2 | Adon-Chelon locality, Borzia Dist., Zabaikalskii Kray, Russia (21.08.2013). |

**Table S2**. The list of 3D models used in the study and technical characteristics of micro-CT scanning (NeoScan N80 [FP]).

*Key*: **Al 0.5**, aluminium filter with different thickness in mm; Cu 0.1, cooper filter with different thickness in mm; \*, SkyScan 1172 (CCD) at the Resource Centre for X-ray Diffraction Studies of Saint Petersburg State University (Saint Petersburg, Russia).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| nn | Specimen | Species | Resolution, (μm) | Acceleration voltage (Kv) | Rotation angle (deg.) | Exposure (ms)/Filter |
| 1 | ZIN 16897 | *Agricola agrestis* | 13.5 | 75 | 0.2 | 248/Cu 0.1 |
| 2 | ZIN 89132 | *Agricola agrestis* | 13.7 | 67 | 0.2 | 178/Al 0.5 |
| 3 | ZIN 97312 | *Agricola agrestis* | 13.5 | 67 | 0.2 | 178/Al 0.5 |
| 4 | ZIN 98482 | *Agricola agrestis* | 13.7 | 75 | 0.2 | 248/Al 1.0 |
| 5 | ZIN 83881 | *Alexandromys fortis* | 15.5 | 75 | 0.2 | 248/Al 1.0 |
| 6 | ZIN 105505 | *Alexandromys fortis* | 15.7 | 75 | 0.2 | 248/Al 1.0 |
| 7 | ZIN 101018 | *A. middendorffii* | 8.96\* | 70 | 0.3 | 2200/Al 0.5 |
| 8 | ZIN 66013 | *A. oeconomus* | 15.1 | 75 | 0.2 | 248/Al 1.0 |
| 9 | ZIN 89161 | *A. oeconomus* | 14.0 | 67 | 0.2 | 178/Al 0.5 |
| 10 | ZIN 96546 | *A. oeconomus* | 15.1 | 75 | 0.2 | 248/Al 1.0 |
| 11 | ZIN 98883 | *A. oeconomus* | 13.5 | 67 | 0.2 | 178/Al 0.5 |
| 12 | ZIN 100612 | *A. oeconomus* | 14.5 | 75 | 0.2 | 248/Al 1.0 |
| 13 | ZIN 101023 | *A. oeconomus* | 15.5 | 75 | 0.2 | 248/Al 1.0 |
| 14 | ZIN 77405 | *Alticola argentatus* | 14.5 | 75 | 0.2 | 248/Al 1.0 |
| 15 | ZIN 77458 | *Alticola argentatus* | 12.5 | 67 | 0.2 | 178/Al 0.5 |
| 16 | ZIN 77464 | *Alticola argentatus* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 17 | ZIN 77489 | *Alticola argentatus* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 18 | ZIN 101796 | *Alticola lemminus* | 8.36 | 89 | 0.3 | 1950/Al 0.5 |
| 19 | ZIN 101797 | *Alticola lemminus* | 7.96 | 89 | 0.3 | 2140/Al 0.5 |
| 20 | ZIN 102289 | *Alticola macrotis* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 21 | ZIN 102307 | *Alticola macrotis* | 12.8 | 67 | 0.2 | 178/Al 0.5 |
| 22 | ZIN 99351 | *Alticola macrotis* | 14.7 | 75 | 0.2 | 248/Al 1.0 |
| 23 | ZIN 107067 | *Alticola semicanus* | 14.3 | 75 | 0.2 | 248/Al 1.0 |
| 24 | ZIN 107068 | *Alticola semicanus* | 14.8 | 75 | 0.2 | 248/Al 1.0 |
| 25 | ZIN 10034 | *Arvicola amphibius* | 19.7 | 84 | 0.2 | 522/Cu 0.1 |
| 26 | ZIN 16365 | *Arvicola amphibius* | 21.1 | 84 | 0.2 | 522/Cu 0.1 |
| 27 | ZIN 45399 | *Arvicola amphibius* | 21.0 | 84 | 0.2 | 522/Cu 0.1 |
| 28 | ZIN 70703 | *Chionomys nivalis* | 14.5 | 67 | 0.2 | 178/Al 0.5 |
| 29 | ZIN 71279 | *Chionomys nivalis* | 14.6 | 75 | 0.2 | 248/Al 1.0 |
| 30 | ZIN 106369 | *Chionomys nivalis* | 14.5 | 75 | 0.2 | 248/Al 1.0 |
| 31 | ZIN 102929 | *Craseomys rufocanus* | 8.28\* | 89 | 0.3 | 2000/Al 0.5 |
| 32 | ZIN 81169 | *Dicrostonyx torquatus* | 17.0 | 84 | 0.2 | 522/Cu 0.1 |
| 33 | ZIN 81254 | *Dicrostonyx torquatus* | 16.5 | 75 | 0.2 | 248/Al 1.0 |
| 34 | ZIN 81552 | *Dicrostonyx torquatus* | 16.5 | 67 | 0.2 | 178/Al 0.5 |
| 35 | ZIN 34835 | *Dinaromys bogdanovi* | 17.5 | 75 | 0.2 | 248/Al 1.0 |
| 36 | ZIN 34887 | *Dinaromys bogdanovi* | 18.0 | 75 | 0.2 | 248/Al 1.0 |
| 37 | ZIN 26607 | *Ellobius lutescens* | 18.5 | 84 | 0.2 | 522/Cu 0.1 |
| 38 | ZIN 83708 | *Ellobius lutescens* | 19.0 | 75 | 0.2 | 248/Al 1.0 |
| 39 | ZIN 85284 | *Ellobius lutescens* | 18.2 | 84 | 0.2 | 522/Cu 0.1 |
| 40 | ZIN 85287 | *Ellobius lutescens* | 17.5 | 84 | 0.2 | 522/Cu 0.1 |
| 41 | ZIN 11763 | *Ellobius talpinus* | 15.5 | 75 | 0.2 | 248/Al 1.0 |
| 42 | ZIN 35828 | *Ellobius talpinus* | 14.5 | 75 | 0.2 | 248/Al 1.0 |
| 43 | ZIN 82955 | *Ellobius talpinus* | 16.0 | 67 | 0.2 | 178/Al 0.5 |
| 44 | ZIN 84395 | *Ellobius talpinus* | 16.0 | 75 | 0.2 | 248/Al 1.0 |
| 45 | ZIN 102342 | *Ellobius talpinus* | 16.2 | 67 | 0.2 | 178/Al 0.5 |
| 46 | ZIN 29170 | *Lagurus lagurus* | 12.7 | 58 | 0.2 | 127/Al 0.25 |
| 47 | ZIN 57188 | *Lagurus lagurus* | 11.5 | 67 | 0.2 | 178/Al 0.5 |
| 48 | ZIN 82110 | *Lasiopodomys brandtii* | 13.5 | 67 | 0.2 | 178/Al 0.5 |
| 49 | ZIN 82114 | *Lasiopodomys brandtii* | 14.0 | 75 | 0.2 | 248/Al 1.0 |
| 50 | ZIN 15332 | *Lasiopodomys gregalis* | 12.0 | 67 | 0.2 | 178/Al 0.5 |
| 51 | ZIN 53120 | *Lasiopodomys gregalis* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 52 | ZIN 96293 | *Lasiopodomys gregalis* | 12.5 | 67 | 0.2 | 178/Al 0.5 |
| 53 | ZIN 103094 | *Lasiopodomys gregalis* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 54 | ZIN 78327 | *L. mandarinus* | 13.0 | 75 | 0.2 | 248/Al 1.0 |
| 55 | ZIN 78614 | *L. mandarinus* | 13.0 | 75 | 0.2 | 248/Al 1.0 |
| 56 | ZIN 101665 | *Lasiopodomys raddei* | 11.5 | 67 | 0.2 | 178/Al 0.5 |
| 57 | ZIN 105338 | *Lasiopodomys raddei* | 12.0 | 67 | 0.2 | 178/Al 0.5 |
| 58 | ZIN 105341 | *Lasiopodomys raddei* | 12.1 | 67 | 0.2 | 178/Al 0.5 |
| 59 | ZIN 105344 | *Lasiopodomys raddei* | 12.5 | 67 | 0.2 | 178/Al 0.5 |
| 60 | ZIN 64159 | *Lemmus sibiricus* | 18.0 | 75 | 0.2 | 248/Al 1.0 |
| 61 | ZIN 81239 | *Lemmus sibiricus* | 16.5 | 75 | 0.2 | 248/Al 1.0 |
| 62 | ZIN 81241 | *Lemmus sibiricus* | 16.7 | 84 | 0.2 | 522/Cu 0.1 |
| 63 | ZIN 19431 | *Microtus arvalis* | 12.5 | 67 | 0.2 | 178/Al 0.5 |
| 64 | ZIN 56750 | *Microtus arvalis* | 12.6 | 67 | 0.2 | 178/Al 0.5 |
| 65 | ZIN 78436 | *Mynomes miurus* | 14.3 | 75 | 0.2 | 248/Al 1.0 |
| 66 | ZIN 40410 | *Mynomes ochrogaster* | 14.5 | 67 | 0.2 | 178/Al 0.5 |
| 67 | ZIN 39888 | *Mynomes pennsylvanicus* | 13.5 | 67 | 0.2 | 178/Al 0.5 |
| 68 | ZIN 74375 | *Mynomes pennsylvanicus* | 13.3 | 75 | 0.2 | 248/Al 1.0 |
| 69 | ZIN 83753(6951) | *Mynomes pennsylvanicus* | 14.5 | 75 | 0.2 | 248/Al 1.0 |
| 70 | ZIN 40412 | *Mynomes richardsoni* | 15.5 | 75 | 0.2 | 248/Al 1.0 |
| 71 | ZIN 21254 | *Clethrionomys centralis* | 12.3 | 67 | 0.2 | 178/Al 0.5 |
| 72 | ZIN 107137 | *Clethrionomys centralis* | 12.5 | 67 | 0.2 | 178/Al 0.5 |
| 73 | ZIN 106573 | *Clethrionomys glareolus* | 11.6 | 67 | 0.2 | 178/Al 0.5 |
| 74 | ZIN 20967 | *Clethrionomys rutilus* | 7.96\* | 89 | 0.3 | 1500/Al 0.5 |
| 75 | ZIN 20974 | *Clethrionomys rutilus* | 7.96\* | 89 | 0.3 | 1700/Al 0.5 |
| 76 | ZIN 20978 | *Clethrionomys rutilus* | 7.88\* | 80 | 0.3 | 1700/Al 0.5 |
| 77 | ZIN 20984 | *Clethrionomys rutilus* | 7.96\* | 89 | 0.3 | 1500/Al 0.5 |
| 78 | ZIN 100554 | *Myopus schisticolor* | 12.0 | 67 | 0.2 | 178/Al 0.5 |
| 79 | ZIN 103730 | *Myopus schisticolor* | 13.0 | 67 | 0.2 | 178/Al 0.5 |
| 80 | ZIN 32560 | *Ondatra zibethicus* | 29.0 | 92 | 0.2 | 765/Cu 0.25 |
| 81 | ZIN 69584 | *Ondatra zibethicus* | 30.6 | 92 | 0.2 | 765/Cu 0.25 |
| 82 | ZIN 84176 | *Ondatra zibethicus* | 30.7 | 92 | 0.2 | 765/Cu 0.25 |
| 83 | ZIN 31495 | *Prometheomys schaposchnikowi* | 17.5 | 84 | 0.2 | 522/Cu 0.1 |
| 84 | ZIN 74487 | *P. schaposchnikowi* | 17.0 | 75 | 0.2 | 248/Al 1.0 |
| 85 | ZIN 74969 | *Terricola subterraneus* | 12.0 | 67 | 0.2 | 178/Al 0.5 |
| 86 | ZIN 80937 | *Terricola subterraneus* | 11.5 | 67 | 0.2 | 178/Al 0.5 |
| 87 | ZIN 84244 | *Terricola subterraneus* | 11.5 | 67 | 0.2 | 178/Al 0.5 |
| 88 | ZIN 39375 | *Neotoma mexicana* | 21.5 | 84 | 0.2 | 522/Cu 0.1 |
| 89 | ZIN 39376 | *Neotoma mexicana* | 21.5 | 75 | 0.2 | 248/Al 1.0 |
| 90 | ZIN 101697 | *Cricetulus barabensis* | 13.5 | 67 | 0.2 | 178/Al 0.5 |