Acta zool. cracov., **39**(1): 61-66, Kraków, 15 Aug., 1996

The Neogene rabbit *Hypolagus igromovi* GUREEV, 1964 (Lagomorpha, Leporidae) from southern European Russia

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Accepted for publication: 19 Jan., 1995

AVERIANOV A. 1996. The Neogene rabbit *Hypolagus igromovi* GUREEV, 1964 (Lagomorpha, Leporidae) from southern European Russia. Acta zool. cracov., **39**(1): 61-66.

Abstract. Relatively numerous remains of *Hypolagus igromovi* are known from the lower Pontian (Late Turolian, MN 13) deposits of the Don River Region, southern European Russia. This is one of the oldest representatives of the genus *Hypolagus* in the Old World. The type series of *H. igromovi* shows some similarities in size and morphology of p3 to *Hypolagus* sp. from the Ruscinian of Moldova and Caucasus, and to a lesser extent to Kazakh (Ruscinian) and Altai (Villafranchian) forms.

Key words: Lagomorpha, *Hypolagus*, Neogene, Russia, systematics.

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I. INTRODUCTION

An extinct species of rabbit, *Hypolagus igromovi* GUREEV, 1964, was based on jaw fragments from Neogene sands on the right bank of the Don River near the village of Rasdorskaya (GUREEV 1964) sampled by the famous Russian paleontologist J. A. ORLOV. In the original description the age of the locality was given as Upper Miocene (GUREEV 1964, pp.118, 120). On the original labels the material is referred to Sarmatian or Meotian sands (Upper Miocene), which are quite abundant in the Don Region, and Meotian sands yielding vertebrate bones in the vicinity of Rasdorskaya were mentioned by BOGATSHOV (1923-24). Since the original description there have been no new finds attributed to *H. igromovi* outside the type locality, but at this locality a mandible belonging to this species was found *in situ* by V. V. TITOV and A. S. TESAKOV in August of 1994. This specimen comes from a Lower Pontian shallow-water limestone intercalated by sand beds, which also contains mollusc shells and fish and turtle remains. Although it belongs to a subadult individual, it corresponds well in the morphology of p3 and the state of preservation (a black bone coated by a carbonate cemented crust of coarse-grained sandstone) with the type material of *H. igromovi*. Thus, this discovery confirms the Upper Miocene (Late Turolian, MN 13) age of this species.

Besides the original description, *H. igromovi* has been mentioned in the literature three times. SYCH (1965, p.8) used this species as comparative material in his important work on the Pliocene and Pleistocene Leporidae of Poland. In this work SYCH mistook the spelling of the name of the species (*gromovi* instead *igromovi*) and its location (Moldova instead of Russia). In a review of the fossil record of lagomorphs DAWSON (1967) gave a queried Early Pliocene age for *H. igromovi*.

Subsequently, *H. igromovi* was mentioned by TOPACHEVSKY (1987, p.87) in connection with his proposition that *Hypolagus* may have invade eastern Europe before the Ruscinian. TOPACHEVSKY tentatively suggested the age of *H. igromovi* to be Meotian, but did not exclude that it could come from beds equivalent in age to the Kuchurgan beds of the northern coast of the Black Sea (Lower Ruscinian, MN 14). According to A. S. TESAKOV (personal communication) a visit to the Rasdorskaya locality showed that the Pontian limestone there is overlain by unfossiliferous Skythian clays of Villafranchian age, so a Ruscinian or younger age for *H. igromovi* can be excluded.

The majority of the material of *H. igromovi*, including all postcranial elements, was not used in the original description. In this paper *H. igromovi* is redescribed and compared with other Eurasiatic species of *Hypolagus*.

A c k n o w l e d g m e n t s. I am very grateful to A. S. TESAKOV and V. V. TITOV for providing me with information about the recent discovery of an *H. igromovi* mandible *in situ* at the type locality and about the stratigraphy of this region, and to Drs. F. A. FLADERER, L. WERDELIN and an anonymous reviewer for reading and correcting the manuscript.

II. MATERIAL

Collection of the Zoological Institute (ZIN): ZIN 48636, holotype, fragment of left maxilla with P3-4 and M1. Collection of the Paleontological Institute (PIN): PIN 1659, 6 mandible fragments, 6 i2, 10 p3, 110 postcranial elements. All measurements are given in mm.

III. SYSTEMATIC PALEONTOLOGY

Family Leporidae FISHER, 1817

Subfamily Archaeolaginae DICE, 1929

Genus *Hypolagus* DICE, 1917

Hypolagus igromovi GUREEV, 1964

S y n o n y m y : 1964. *Hypolagus I.Gromovi* GUREEV, sp. nov. GUREEV, p. 118.
1965. *Hypolagus gromovi* GUREEV, 1963 [sic]. SYCH, p. 8.
1967. *Hypolagus gromovi* GUREEV, 1964. DAWSON, p. 293.
1987. *H[ypolagus] I.Gromovi.* TOPACHEVSKY, p. 87.

H o l o t y p e: ZIN 48636, fragment of left maxilla with P3-4 and M1. Rasdorskaya, right bank of Don River, Rostov Region, Russia. Lower Pontian beds, Upper Miocene (Late Turolian, MN 13).

E m e n d e d d i a g n o s i s: A relatively large species of *Hypolagus* with p3 length 3.0-5.1, M=3.87±0.17, n=10. *H. igromovi* differs from Chinese Late Villafranchian *H. schreuderi* TEILHARD DE CHARDIN, 1940 in its significantly larger alveolar length of p3-m3 and smaller length of the mandibular diastema (t=6.55 and 5.17, P>0.05) (calculated from dimensions of the type series of *H. schreuderi* from locality 18 near Beijing, TEILHARD DE CHARDIN 1940, p. 38) and somewhat larger rate of the posteroexternal reentrant (RI): 0.579±0.01, n=10 in *H. igromovi* and 0.524±0.02 in *H. schreuderi* (calculated from figured specimens from Locality 18, Yushe III and Nihewan, TEILHARD DE CHARDIN 1940; CAI 1989).

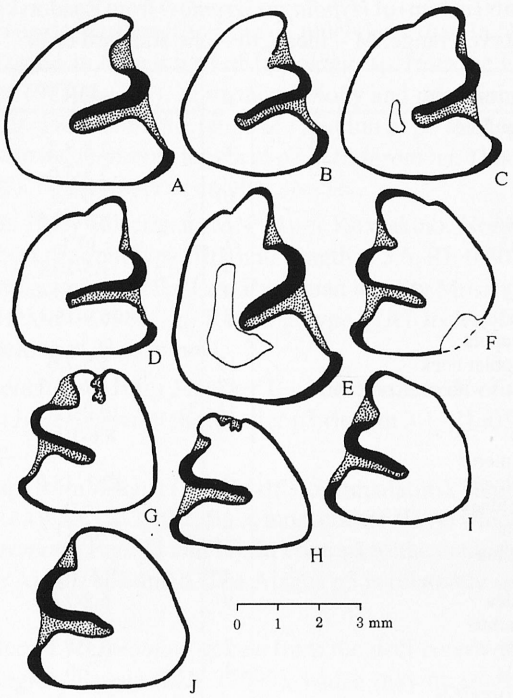

Fig. 1. *Hypolagus igromovi*, Rasdorskaya village, Don River, southern European Russia. Lower Pontian beds, Upper Miocene (Late Turolian, MN 13). Occlusal view of p3. A: PIN 1659/6, B: PIN 1659/10, C, D, E: PIN 1659/– (E: tooth broken near its midheight, the pulp cavity is visible), F: PIN 1659/15, G: PIN 1659/8, H: PIN 1659/7, I: PIN 1659/9, J: PIN 1659/11.

H. igromovi differs from European Pliocene *H. beremendensis* (PÉTENYI, 1864) and Pleistocene *H. brachygnathus* KORMOS, 1934, which could be synonymous (WOLSAN 1990) or, more probably, are distinct biological species differing little in size and morphology (FLADERER 1987; FLADERER & REINER 1995) in its significantly greater alveolar length of p3-m3, length of the mandibular diastema, length (thickness) of the lower incisor and in most measurements of postcranial elements [comparative data were taken from KOWALSKI (1958), SULIMSKI (1964) and SYCH (1965); material from Węże, Rębielice, Kadzielnia and Kamyk].

D e s c r i p t i o n. The anteroexternal reentrant of p3 with cement, uncrenulated and smooth-sided. The posteroexternal reentrant of p3 deeply incised and predominantly deflected posteriorly, its innermost part abruptly turned anteriorly. In the posteroexternal reentrant of p3 the thick enamel usually is sigmoid, while the thin enamel is not crenulated. According to the scheme of FLADERER (1987), the following morphotypes of p3 are present (n=10): I/A – 10%, I/C – 30%, II/D– 20%, III/A – 20% and VI – 20% (n=10). The teeth of morphotype VI have a deep and folded anterior reentrant. The rate of the posteroexternal fold (RI) of p3 ranges from 0.52 to 0.64 (M=0.58±0.001).

The mandibles are robust, with relatively short diastemata and thick, strongly vertically inclined lower incisors.

Postcranial elements of *H. igromovi* (Table I) do not show any significant differences from those of other species of *Hypolagus* (SYCH 1965; CAMPBELL 1969; FLADERER 1984).

Table I

Measurements (in mm) of *Hypolagus igromovi* from Rasdorskaya, south Russian plain. OR – observed range, M – mean, m – one standard error

Measurements	n	OR	M	m
Mandible				
i2 length (thickness)	8	2.8-3.2	3.03	0.06
i2 width	8	3.3-3.6	3.48	0.04
p3 length	10	3.0-5.1	3.78	0.17
Alveolar length of p3-m3	3	18.9-19.6	19.20	0.21
Coronar length of p3-m3	1	17.1		
Length of diastema	4	17.5-20.1	19.25	0.21
Depth of mandible at p3	9	11.8-15.4	13.59	0.44
Depth of mandible at m3	3	16.9-19.1	18.23	0.68
Scapula				
Minimum length of scapular neck	19	5.5-7.0	6.37	0.09
Length of distal epiphysis with coracoideum	12	11.7-13.7	12.57	0.15
Length of glenoid cavity	13	10.0-12.3	11.25	0.20
Width of glenoid cavity	17	8.6-10.3	9.55	0.11
Humerus				
Width of proximal epiphysis	2	12.7, 15.0		
Minimum width of diaphysis	1	6.0		
Width of distal epiphysis	7	10.1-11.6	10.94	0.19
Ulna				
Height of olecranon	4	8.6-10.1	9.45	0.33
Width of humeral trochlea	9	6.2-7.6	6.91	0.15
Radius				
Width of proximal epiphysis	2	6.4, 7.1		
Width of distal epiphysis	1	7.6		
Metacarpale II				
Length	2	26.6, 28.7		
Width of proximal epiphysis	2	4.5, 4.7		
Width of distal epiphysis	2	4.6, 5.0		
Pelvis				
Length of acetabulum	16	8.2-10.1	9.11	0.12
Length of foramen obturatum	2	20.1, 20.2		
Height of ischial neck anterior to acetabulum	9	10.4-12.8	12.01	0.27
Femur				
Width between femoral head and third trochanter	4	20.0-22.1	20.65	0.50
Width between third and minor trochanters	3	16.8-21.3	18.90	1.31
Length (thickness) of femoral head	6	7.3-9.2	8.33	0.25
Minimum width of diaphysis	2	7.2, 7.6		
Width of distal epiphysis	3	16.8-18.0	17.20	0.40
Tibia				
Width of proximal epiphysis	5	16.3-20.0	17.74	0.64
Minimum width of diaphysis	3	7.6-8.8	8.07	0.37
Width of distal epiphysis	14	11.0-13.4	12.54	0.17
Length of distal epiphysis	14	7.2-9.0	8.31	0.14
Calcaneum				
Length	2	29.0, 29.1		
Metatarsale II				
Width of proximal epiphysis	4	4.4-5.6	5.00	0.25
Metatarsale III				
Length	3	44.0-47.0	45.80	0.92
Width of proximal epiphysis	4	4.1-5.7	4.62	0.39
Width of distal epiphysis	3	5.5-6.6	6.07	0.32
Metatarsale IV				
Width of proximal epiphysis	1	4.9		
Metatarsale V				
Length	2	38.8, 42.4		
Width of proximal epiphysis	2	6.5, 7.5		
Width of distal epiphysis	2	5.2, 5.5		

IV. DISCUSSION AND CONCLUSIONS

Rabbits of the genus *Hypolagus* appear in Eurasia much later than in North America. One of the earliest records of this genus in Asia is a p3 of *Hypolagus* sp. from the Late Turolian (MN 13) of Harr Obo 2, China (QIU 1987, fig. 32). In its morphology and rate of the posteroexternal fold (RI=0.61) this tooth is not excluded from the range of variation of p3 in *H. igromovi*. However, its size (length ca. 3.0) is close to the minimum length of p3 in *H. igromovi*. This specimen may belong to *H. schreuderi* (CAI 1989), *H. igromovi* or another species.

Hypolagus sp. from the Early Ruscinian (MN 14) of Kosyakino, Northern Caucasus is very close to *H. igromovi* in the p3 (morphotype III/B): its length is 3.6, RI=0.60 (collection ZIN). The same characters are present in a p3 from the Late Ruscinian locality Musait in Moldova (MN 15), figured by DAVID & SHUSHPANOV (1986, fig. 1, morphotype V/A). Its length is 3.5, RI=0.56. Both specimens may possibly belong to *H. igromovi*.

Lower Ruscinian *Hypolagus* sp. from Member B of the Sasin beds of Olkhon Island, Baikal Lake, Siberia, differs from *H. igromovi* in the smaller p3 (length 3.1, RI=0.56, morphotype III/A: MATS et al. 1982, pl. 3, fig. 19).

Ruscinian *Hypolagus* sp. from Ajagus (MN 14-15), Semipalatinsk Region, Kazakhstan, has a deep anterior reentrant (ERBAJEVA 1982, pl.2, fig.z, morphotype III/A) which can also be observed in two specimens of *H. igromovi* (Figs. G and H). In contrast to the condition in *H. igromovi* this feature is not folded in the Ajagus specimen. The Ajagus p3 is relatively small (length 3.1), with a moderate RI (0.55).

A p3 very similar to that of *H. igromovi* comes from the drill core N 887 near the village of Zolotushka in the Altai Region, Russia (ZIN 25699), which may be from lower Villafranchian deposits (MN 16?). It is characterized by relatively great length (3.4) and RI (0.57) and is of morphotype II/D, which was also found in *H. igromovi*.

Middle Villafranchian (MN 17) *Hypolagus* cf. *brachygnathus* from the lower horizon of Akkulaevo, Bashkiria (SUKHOV 1970, pl. 1, fig. 5, morphotype I/A) and *H. brachygnathus* from Kiikbai, southern Kazakhstan (LYTSHEV & SAVINOV 1974, fig. 1g, morphotype II/A) are nearly identical and are both here referred to *Hypolagus* cf. *beremendensis*. These p3 have the same length (3.3) and similar RI (0.56 and 0.53). In these characters they are closer to *H. beremendensis* than to *H. igromovi*. Villafranchian *Hypolagus* sp. from Simbugino, Bashkiria (MN 17) and from Shamar and Beregovaya, Mongolia and Transbaikalia (MN 16) differs from *H. igromovi* in the somewhat shorter p3 (length 2.8-3.6, M=3.13, n=13 and 2.6-3.3, M=2.94, n=7 respectively; ERBAJEVA & ANGERMANN 1983).

This review of the limited east European and Asiatic material of *Hypolagus* shows that forms close to *H. igromovi* in structure and measurements of p3 were distributed in the Ruscinian of the northern Caucasus (Kosyakino), Moldova (Musait), and eastern Kazakhstan (Ajagus), and possibly in the Villafranchian of the Altai Region (Zolotushka). This data extends the geological range of *H. igromovi* from the late Turolian to at least the late Ruscinian, and possibly the early Villafranchian, and its geographic range to eastern Europe (Caucasus and Moldova) and Asia (Ajagus and Zolotushka).

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