

CAROLUS LINNAEUS AND THE EDIBLE DORMOUSE

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ABSTRACT – Carolus Linnaeus was totally unacquainted with the Edible Dormouse *Myoxus glis* (L.), a species not found in Sweden : while describing *Mus Rattus* in the 10th Edition of the "Systema Naturae" (1758), the Swedish naturalist confessed his ignorance concerning the "Glis" of the ancients and suggested that it might have been the marmot or the hamster. Thanks to written information received from his correspondent in Slovenia, Giovanni Antonio Scopoli, Linnaeus was able to include the new species *Sciurus Glis* in his 12th Edition of the "Systema Naturae" (1766), reporting almost verbatim a summary of Scopoli's description of the rodent. Scopoli's letter is still preserved in the Library of the Linnean Society of London. The Linnean type locality "Habitat in Europa australi" for the Edible Dormouse *Myoxus glis glis* must therefore be restricted to "Southern Carniola, Slovenia", *contra* "Germany" as stated, for instance, by Miller (1912), Toschi (1965), Corbet (1978) and Storch (1978). A new name is required for the continental European form, for which *M. glis germanicus* ssp. nov. is here proposed. Some information on the appreciation of *Myoxus glis* as a delicacy ("*carnes avide eduntur*" in Linnaeus 'words) conclude the paper.

Key words: *Myoxus glis glis* , *Myoxus glis germanicus* ssp. nov., Linnaeus, Type locality, Taxonomy.

RIASSUNTO – Carlo Linneo ed il Ghiro – Dopo aver descritto *Mus Rattus* nella decima edizione del "Systema Naturae" (1758) il naturalista svedese Carlo Linneo confessava di non essere a conoscenza del "*Glis*" degli antichi autori e ne suggeriva l'identificazione con la Marmotta o con il Criceto comune; e infatti noto che *Myoxus glis* non e diffuso in Svezia. In base ad una lettera ricevuta dal suo corrispondente in Slovenia, Giovanni Antonio Scopoli, Linneo fu in grado di descrivere questa nuova specie come *Sciurus Glis* nella dodicesima edizione del "Systema Naturae" (1766), riportando quasi parola per parola un sunto della descrizione latina del Ghiro comunicatagli da Scopoli. La lettera di Scopoli si trova ancora oggi nella biblioteca della Linnean Society di Londra. La località tipica per il Ghiro *Myoxus glis glis* "Habitat in *Europa australi*" di Linneo deve essere quindi ristretta alla Carniola meridionale, Slovenia; "Germania" indicata da numerosi autori (cfr. Miller, 1912; Toschi, 1965; Corbet, 1978; Storch, 1978) è dunque errata. Per la forma dell'Europa continentale il nome di *Myoxus glis germanicus* ssp. nov. viene proposto in questa sede. Alcune notizie sulla commestibilità delle carni del Ghiro ("*carnes avide eduntur*" secondo le parole stesse di Linneo) concludono il lavoro.

Parole chiave: *Myoxus glis glis*, *Myoxus glis germanicus* ssp. nov., Linneo, Località tipica, Tassonomia.

THE HISTORICAL EVIDENCE

A recent perusal of the scientific correspondence exchanged between the Swedish naturalist Carolus Linnaeus (Rashult, 1707 - Hammarby, 1778) and his

Italian colleague Giovanni Antonio Scopoli (Cavalese, 1723 - Pavia, 1788) in 1763 has brought to our attention some interesting details on the taxonomy and nomenclature of a few animals, one of which is the Edible or Fat Dormouse *Myoxus glis* (L., 1766).

Carolus Linnaeus was totally unacquainted with the Edible Dormouse, a species not found in Sweden : while describing *Mus Rattus* in the 10th Edition of his "Systema Naturae" (1758), the Swedish author confessed his ignorance concerning the "*Glis*" of the ancients and concluded that it might have been the alpine marmot or the hamster: "*Glireni veterum nze ignorare agnosco, nisi sit Marmota aut Cricetus*".

A faithful correspondent of Linnaeus in Slovenia, the Italian naturalist Giovanni Antonio Scopoli, thought that it might have been useful for the sake of scientific veracity to communicate first-hand details of this mammal to Linnaeus, in order to have it included in a future, revised edition of "Systema Naturae". At that time Scopoli was employed by the Austrian Imperial government as a physician to the quicksilver miners of Idria in Carniola (the region around Ljubljana in Slovenia). His profession was undervalued and his salary was supplemented by collecting taxes levied on wine sales in the area.

In spite of this isolated life, Scopoli cultivated several interests in the natural history of Carniola, collecting plants and insects and making careful studies on the local birds and mammals, which he observed during his long residence in Idria and numerous excursions through Slovenia.

Thanks to a long letter written on the 7th of April 1763 by Scopoli, Linnaeus received an accurate description of *Mus Glis* (see Appendix 1). Thus he was able to include it as a new species under the name of *Sciurus Glis* in his 12th Edition of "Systema Naturae" (1766), where he reported almost *verbatim* a summary of Scopoli's Latin description (see Appendix 2).

Scopoli's letter is still preserved in the library of the Linnean Society of London among the Linnean correspondence. Scopoli's description of *Mus Glis* is very detailed, most meticulous when giving body measurements. Obviously he had a fresh specimen in front of him when writing this letter. For instance, he gives the length and number of vibrissae: "seven longitudinal series of whiskers, the longest ones measuring two unciae", the colour and diameter of the subrounded ears, the shape of teeth, tongue and palate; the length reached by the extended tail in comparison with the whole body of the dormouse.

A short account of the dormouse's behaviour is also repeated practically unchanged by Linnaeus: "During the summer it nests in the cavity of trees; eats acorns, hazelnuts, apple and pear pips, gnawing and then discarding the flesh of the fruits ; it remains hidden during the day and comes out during the night.

In the autumn it grows exceedingly fat, especially around its ovate kidneys, and, therefore, it is avidly hunted by the peasants who also sell its pelt to foreigners".

On the 17th of May 1763 an enthusiastic Linnaeus replied from Uppsala, gratefully acknowledging Scopoli's helpful information: "*Epistolam Tuam V.A. d. 7 aprilis datani rite accepi, erat haec observationibus adeo dives, ut poterat ipsos flectere Deos. Hac occasione etiani vidi Glireni veterum, altis tenebris immersam,*

nunc extractam, pro qua valde sum in aere Tuo; perplacuit etiam pulcherrima avis europaea Picus muralis dicta". Linnaeus' original letters to Scopoli, formerly in the State Archives of Verona, have now disappeared, but they were transcribed and published by de Cobelli & Delaiti in 1889.

THE TYPE LOCALITY OF THE EDIBLE DORMOUSE

An interesting problem now arises concerning the correct type locality of Linnaeus' *Sciurus glis*. Although briefly mentioning other authors, such as Gessner, Dodaert, Ray and Brisson, Linnaeus clearly relies on and publicly acknowledges Scopoli's contribution for the description of the dormouse, a rodent which the Swedish naturalist had never been able to see personally. Moreover, he designates a correct type locality for *Sciurus Glis*: "*Habitat in Europa australi*", i.e. "Southern Europe".

Since Scopoli's specimen is stated to originate from "*Carniolia, in primis inferiore*" in the letter of 1763, we here restrict the Linnean type locality to Southern Carniola in Slovenia, obviously in Southern Europe, *contra* "Germany" as given, for instance, by Miller (1912), Toschi (1965), Corbet (1978) and Storch (1978).

As a matter of fact, Article 72 H (b) of the International Code of Zoological Nomenclature (1985) recommends that "a statement of a type locality that is found to be erroneous, should be corrected".

According to recent authors (Ondrias, 1966; Corbet, 1978; Storch, 1978; Kryštufek, 1991) *Glis* (= *Myoxus*) *glis postus* Montagu, 1923, described from Veliki Drgomalj, Gorski Kotar, Croatia, is the form of Edible Dormouse commonly found in the former Yugoslavia; it differs from "*Glis glis glis auctorum*" of Europe (except for the Mediterranean region) by the "yellowish-brown tint of its upperparts, the anterior side of the carpal region without a brownish line, and the condylobasal length of skull up to 42 mm" (Ondrias, 1966). Now, applying "Southern Carniola, Slovenia" as the correct type locality of *Myoxus glis glis* (L.), *M. g. postus* becomes a junior synonym of nominate *glis*, and a name is required for the W, Middle and E European form of the Edible Dormouse. Miller (1912), followed by Toschi (1959) provided a list of names which are only alternative synonyms for *Sciurus Glis* of Linnaeus. Moreover, the corresponding localities that he reported appear to be erroneous or incomplete when one actually checks the original references. For instance, *Glis esculentus* Blumenbach, 1779 is only an intentional substitute name for *Sciurus Glis* L. and its distribution is indicated as "im Sudlichern Europa", not as "Central Europe", as reported by Miller (1912).

Oken's *Glis vulgaris* is practically an alternative name for the Linnean "*Sc. Glis, Myoxus Gl.*", not the description of a new, different taxon. Oken (1816, page 868) was the first to quote "Deutschland" besides the known localities "Europa, Mittelasiem, an Wolga, mehr südlich, ... in Krain" for the composite form of "*glis Romanorum*".

Owen's *Myoxus avellanus* is the caption to a plate of dentition derived from Cuvier without indication of origin; there is also the suspicion of confusion with

Myoxus avellanarius, a synonym for the native English species *Muscardinus avellanarius* (Owen, 1840-45, Atlas, Plate 105, fig. 6).

All the subsequent authors quoted by Miller, while applying either *Glis* or *Myoxus* for the generic name, revive and maintain the specific name *glis*. All these names should be considered as junior synonyms of *Myoxus glis glis* (L.) (= *postus* Montagu), type locality S. Carniola, Slovenia (*utsupra*).

Thus, it is apparent that the Edible Dormouse of Continental Europe, except the Mediterranean (in the sense of Corbet, 1978), is left without a name, for which we propose :

***Myoxus glis germanicus* ssp. nov.**

As pointed out by Ondrias (1966), it can be distinguished from nominate *M. glis glis* by: " the upperparts of the body of pinkish brown tint, anterior side of the carpal region without brownish line, condylobasal length of skull less than 38.0 mm".

As the holotype we select the female specimen Brit. Mus. (Nat.Hist.) No. 1911. 1.1.1.03, from Marxheim, Bavaria, Germany, collected by R.Schuchardt, 18.VIII.1885, ex Lilford Collection, skin and skull (CBL 36.8 mm ; greatest length 39.0 mm). This specimen is the same one which was examined by Miller and which was presumably available to Montagu for comparison when describing *postus*. We are pleased to borrow Professor G. Storch's suggestion of the name *germanicus*, expressed during this very conference, hoping to ensure stability to the Middle European taxon, without being compelled to change its traditional type locality of "Germany". However, we feel that further studies on morphology and cytotaxonomy are needed in order to define better the identity and subspecific relationships of the populations of *Myoxus glis* from Northern Italy, Slovenia and Croatia.

EDIBILITY OF *MYOXUS GLIS*

Finally, a few words could be appended concerning the Linnean sentence "*carnes avidè eduntur*" (their flesh is avidly eaten), which also explains the English name "Edible Dormouse" for this rodent (see Carpaneto & Cristaldi, 1995, about *Myoxus glis* as a delicacy for the ancient Romans, who fattened dormice inside special pottery containers or *gliraria*).

Mattioli (1559) wrote of "salted dormice, pressed inside barrels like sardines in Gorizia, Carniola and Styria", or of dormice used as a medicine when "skinned, eviscerated and simmered with honey, spikenard and water in a new pan" to be used later as a remedy for ear aches (see Appendix 3).

Bartolomeo Scappi (1570), the "secret" cook of Pope Pius V, praised dormice, fattened from October to February, skinned and then slowly roasted on a skewer as well as Guinea pigs, a novel addition to European banquets from the Americas (see Appendix 4). Possibly few people took into consideration the advice of Mattioli that "fat dormice destroy one's appetite, generate heavy and cold humours and are hard to digest".

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Appendix 1

Excerpts from Letter No. 10 by G.A. Scopoli to C. Linnaeus, dated Idria, Slovenia, 7th April 1763 (Library of the Linnean Society of London).

Ill. et Celeberrimo Viro

D. Car. v. Linne Equiti de stella polari S. P. D.

Jo. Scopoli

En descriptionem Gliris Romanorum et Pici murarii, quibus nonnullas alias observationes adiungo.

Mus (Glis) cauda mediocri pilosa, corpore supra cinereo : subtus genisque albidis.

Plin. Lib. XXXVI Cap. I Censoriae Leges, Glires in coenis apponi vetabant.

Mathiol. Diosc. p. 281. Glis.

Habitat in Carniolia, in primis inferiore.

Statura *M. Ratti. Nasus* pilosus, basi macula lunata fusca; naribus arcuatis.

Idem inter nares planiusculus lineis binis depressis cruciformibus exaratus. *Labium* superius bifidum, inferius fere hemisphaericum et brevius. *Genae* albae. Inter nasum et oculos nigros utrinque prodeunt septem mystaciorum series longitudinales quorum longiores biunciales sunt, ceteri breviores. *Auriculae* subrotundae, in adultis saepe incisae, superne fusco-cinereae, subtus pallidiores; diametro semiunciali. Inter aures et oculos utrinque mystaces tres. *Oculi* duobus propriis mystaciis superciliati, quorum unus alio duplo longior est. *Capitis* latitudo inter aures uncialis, inter oculos semiuncialis, distantia oculi a nasi apice, linearum (7). Rictus oris clausi quinque lineas longus. **E** divisura labii superioris prospiciunt *dentes* duo primores, contigui, truncati, lineam et dimidiam longi. Idem in mandibula inferiore rufi, paralleli, teretiusculi, quattuor lineas longi, teguntur a primoribus maxillae superioris. Dentes lanarii a molaribus notabili spatio dissiti. Molares in singula maxilla quattuor, truncati, contigui, superne sulcis transversis exarati. Palatum antice plicam gerit sterno humano fere similem, dein plicam transversam solitariam, denique plicarum aliarum minorumque paria sex. *Lingua* glabra, apice rotundata.

Palmae tetradactylae: digiti pilosis, aequae crassis: mediis longioribus; unguibus aduncis, acuminatis, albidis. Sub singula palma sunt calli tumidi quinque.

Plantae pentadactylae; pollice digitis aliis duplo brevior; callis sex. *Cauda* pilosa, fere ut in *Sciuro scandente*, longitudine sua ad aures usque perveniens, non ad nasum, hinc toto corpore paulo brevior.

Aestate nidificat in cavis arboribus, proles generat (9-12). Victitat glandibus, nucibus avellanis, seminibus Pomorum et Pyrorum, pomi pulpam terebrans, abiiciens. Noctu exit, interdiu latet. Autumno summopere pinguescit, praesertim circa renes ovatos, hinc avide voratur a plebeis, qui pelles detractas exteris divendunt. Octobri M. gregatim migrat in subterraneas latebras ibique dormit usque ad finem M. Maii. Cacodaemonis nescio cuius, hos Murcs migraturos agitantis potestas, icone expressa, prorsum fabulosa exstat apud *Valvasor* in Chron. Carniol. [...]

Opuscula mea de Minera Hydrargyri et Vitriolo nostro, una cum aliis rebus, per Cl. Gronovium ad te misi, de quibus Tuum expecto Iudicium.

Tandem rogo, ne hilum dubites de veritate eorum, quae hisce litteris continentur. Omni forma luris, si volueris, eam iureiurando Tibi confirmabo. Vale !

Dab. Idriae 7ma Aprilis 1763.

Appendix 2

(From: Caroli a Linne - Systema Naturae, 1766, I, page 87)

Glis. 8. S. canus, subtus albidus.

Glis. Gesn. quadr. 619. Dodart. act. 3. p. 40. t. 7. Raj. quadr. 229.

Mus cauda pilosa, corpore supra obscure cinereo, subtus exalbido. Briss. quadr. 160.

Habitat in Europa australi; victitat glandibus, nucibus, seminibus pomorum; nidificat in cavis arborum pullis 9-12; interdiu latet; autumno pinguescit; octobri gregatim migrat in latebras subterraneas, ibique hybernat in finem Maji. Pelles venduntur; carnes avidae eduntur. D. Scopoli.

Corpus statura Muris volantis, canum, subtus albidum. Cauda Sciuri vulgaris valde hirsuta, cana. Genae albae. Mystacces longiores ipso capite. Pedes 4-5.

Appendix 3

(From: Mattioli P.A., 1559 - Discorsi..., page 236)

De i Topi Cap. LXII

Spetie di topi sono anchora i Ghiri. E impero (come riferisce Plinio al I capitolo del 36^o libro) vietavano le leggi romane, che non si dovessero mangiare nelle cene i ghiri. Ma a' nostri tempi sono stati posti in uso nei cibi; parendo a gli huomini, che si facesse torto al palato e alla gola, a lasciar perdere così grassi animali; non havendo rispetto, che per la grassezza loro distruggano l'appetito, generino grossi & frigidissimi humori & sieno duri da digerire. I ghiri che nascono nelle selve d'un paese confinato o da' monti o da' fiumi non lasciano intrare nella loro schiera gli altri forestieri, & venendovi combattono con essi fino alla morte. Governano e nutriscono i padri con non poca pietà, quando sono impotenti per la vecchiezza. Finiscono la vecchiezza riposandosi tutto il verno: imperoche dormendo nascosi si ringiovaniscono poscia la state. Di questi nelle montagne vicino a Goritia, in Carniola, in Stiria & altre provincie circonvicine se ne pigliano la notte con una certa arte, quando i faggi producono assai faggiuola, numero infinitissimo, di modo che se ne salano i bariglioni, come far si costuma delle sardelle. E' utile medicinalmente la carne loro, quando son ben grassi, a coloro che patiscono la fame canina, la quale chiamano i medici Bolismo. Cuoconsi i ghiri scorticati, e sviscerati nel mlc in una pignatta nuova insieme con nardo, fino che cali la terza parte dell'acqua : e serbansi poscia per quei malori delle orecchie, che malagevolmente si possono curare con altri rimedi.

Appendix 4

(From: Scappi B., 1570, Opera ..., page 36)

Per cucinare il coniglio d'India & il ghiro

Cap. XCV

Alcuni chiamano il coniglio d'India, porchetto, percioche ha il muso aguzzo, et gli orecchi piccioli, e tondi, et il pelo piu chiaro che il nostrale, et quel pelo tira piu alla setola porcina che al lanoso. Volendo arrostirlo nello spedo, pelisi con acqua calda, et cavinosi gli interiori, et empiasi d'una compositione simile a quella del capretto, come nel capitolo 77, et inspedisi, et facciasi cuocere a lento foco. Si può anche arrostire voto, et sottestato al forno. In questo tnodo si può accomodarc il ghiro, il qual e animalletto di coda lunga, et pilosa, et ha il mostaccio aguzzo con una dentatura mordace; e tali animalletti si pascono di castagne, et noci, et nascono nelli detti arborei, et la sua stagione comincia dal mese d'Ottobre, et dura per tutto Febraro, percioche in quel tempo son grassi. La medesima stagione è del coniglio d'India, benche in Roma, et in altri lochi d'Italia se ne trovano quasi tutto l'anno.