

**LOCATION OF DEGU, *OCTODON DEGUS* (MOLINA, 1782),
OCTODONTIDAE (RODENTIA) IN CENTRAL EUROPEAN
FAUNA**

*Stwierdzenie stanowiska koszatniczki *Octodon degus* (Molina, 1782), *Octodontidae* (Rodentia)
w Środkowej Europie*

Grzegorz Kłys, Robert Kościów, Andrzej Lech Ruprecht

ABSTRACT: There has been noted that close to a breeding site of Barn Owl with 3 nestlings Grzegorz Kłys discovered in July 12 the 1997 a food storage consisting of three rodents. Young owls stayed in a provisional “nest” on a church spire floor covered with the owl pellets. They were still covered with white down. The nest was situated in the temple located at the town of Będzin /Upper Silesia/ - UTM position CA 67. One of these three preys was a not fully grown specimen of degu. After the dissection of their skulls conducted by insects of beetle species called *Dermestes lardarius* L. it turned out that one of them is considerably different in terms of morphological features from all known species of rodents living in Europe. The authors discuss the hypotheses that in their opinion that degu could have come from a local population existing in natural conditions or that the owl could have found it as a carrion while penetrating the dumping site in search for food.

KEY WORDS: *predation, owls, subterranean rodent, Octodon, Chile and Peru*

According to Walker's (1975) data there are three currently recognized degu: *Octodon degus* (2n=58) is found in the coastal regions and in the mountains up to about 1,200 m in Chile. The length of the head and the body is from 125 to 195 mm, and the tail is from 105 to 165 mm with a slight black brush at the end. Adult degu weight from 200 to 300 grams. The incisor enamel is light orange. The coloration above is grayish to brownish, often with an orange cast and the under part is creamy yellow. There are four digits on the forefeet and five on the hind feet, equipped with sharp claws. Octodon is not adapted to fossorial life and probably lives in crevices between rocks or roots and perhaps in burrows of other species. The genus is reported to be diurnal, but patterns of urinary metabolite excretion suggest greater activity during the night in captivity.

Little is known about degu in wild, but in captivity they will breed throughout the year, although somewhat erratically. Gestation lasts 90 days and one to ten young are born with their eyes shut and with sparse hair cover. They grow rapidly and can be weaned at three weeks of age. Sexual maturity in females may not occur for 5 to 14 months, but ovarian activity is apparent at 2 weeks of age, although no vaginal perforation occurs. There are four pairs of mammae; one pair inguinal and three are ventral abdominal.

In Polish language degu is called “koszatniczka”. The rodent is characterized by the ability of autotomy of the tail. The skin of the end part of the tail falls off with little bleeding; this ability can save degu’s life when the animal is cached by a predator. The rodent can also dig burrows and occur in the Andes in Chile and Peru (Kowalski, 1991).

Material and method

The specimen of found degu skull belongs to the scientific collection of the Silesian University. The lack of access to professional literature and comparative materials of rodents made one of us (RK) make a detailed drawing of the skull (fig. 1). We sent the drawing to Andrzej Lech Ruprecht a professional mammalogist (the curator of mammals, retired: previously Mammal Research Institute of Polish Academy of Science in Białowieża) in order to recognize the species. The lack of the keys to determination of world rodent fauna made ALR consult his colleague mammalogists of the Zoological Museum Moscow, State University in Moscow, Russia, to whom the figure was forwarded. They stated unanimously that after comparison of the species with the representative series of skulls of the *Octodontidae* family, this is the closest to the species of *Octodon degu* (Molina, 1782).

Results

The examination of the degu skull revealed that it belonged to a young individual. This is shown by (1) the presence of a fontanel (fonticulus) between ossa frontalia and parietalia as well as (2) a interfrontal suture (*sutura metopica*) (Fig.1, Table 1). In adult rodents the frontal bone (*os frontale*) is an azygous skull bone (annotation by ALR).

Dental formula, not fully grown(M^3):

M_3

Incisivi 1, Canini 0, Praemolares 1, Molares M^1 , M^2 , (M^3)

Incisivi 1, Canini 0, Praemolares 1, Molares M_1 , M_2 , (M_3)



Fig. 1a. Norma basilaris of the degu's skull from Będzin town /UTM CA 67/ Upper Silesia. Phot. G. Kłys /org./.



Fig. 1b. Norma lateralis of the degu's skull from Będzin town /UTM CA 67/ Upper Silesia. Phot. G. Kłys /org./.



Fig. 1c. Right half of mandible of the degu's from Będzin town /UTM CA 67/ Upper Silesia. Phot. G. Kłys /org./.

In lateral norma (*norma lateralis*) one's attention is drawn to prominent auditory bullas (bullae tympanici), telling indirectly that hearing played a crucial role for the examined animal, what could be connected with its nocturnal and dusk activity (cf. also Walker, 1975). Moreover the structure of the crown of molar teeth which resembles somewhat rodents of the Old World of the genus *Meriones* Illiger, 1811 (Wilson, Reeder, 1993).

Discussion

The rodent found by one of us (GK) nearby a "nest" of Barn Owl in natural conditions, legitimates us to notify this fact in mammalogical literature. The low age of its skull does not rule out the possibility that the species could reproduce in natural conditions in the town of Będzin, where it was hunted by a Barn Owl or found as a carrion while searching for food.

Our experiments on digestion of food by owls in aviary conditions (Raczyński & Ruprecht, 1974) pointed among other things that the degree of determination of bony remains prey in owl pellets is influenced considerably by the species and the age of an owl, by the species and the age of a prey, by ethological and ecological features of an owl, from which the pellets were collected. These factors can negatively influence the condition of bony remains and their later determination both in quantity and quality remains. Moreover, controlled owl feeding has allowed to observe that these birds can also source food consisting of dead animals left in the aviary. Usually in order to examine possible preferences we left food consisting of dead animals (rodents, shrews, birds) in surplus (ad libitum) and during the morning tending we collected the remains. We noticed that the owls more willingly satisfied themselves with birds, and the rodents had only the heads torn off and the headless carcasses became just the rest of food.

As it is known from avian physiology the secretion from the uropygium gland (*Glandula uropygii*) contains fat and ergosterol, which under the exposure to sunlight it turns into calcypherol containing vitamin D.

A bird while spreading by means of its bill the product of this gland over the plumage swallows certain amount of this secretion containing vitamin D (Ferens, Wojtusiak, 1960). Feeding predatory birds and owls in ZOO environment with skinned birds caused after a while some symptoms avitaminosis D. Heads of rodents both in aviary and in natural conditions are for owls food rich in vitamins and other nutritious substances (Dementiev, 1940).

The last hypothesis says that the degu, which was found by us, could have been an object of so fashionable in Poland in recent years breeding of exotic animals. It died and was thrown to the dumping site, visited by an owl searching for food.

Model experiment conducted by south American scientists on hunting two species of Argentinean *Ctenomys* by three species of owl and parallel comparing it to the results of hunting them in traps, enables to some extent verifying the hypotheses we have presented (cf. also Vassallo et al., 1994).

Acknowledgements

We would like to thank warmly Dr Olga Leonidowna Rossolimo and Dr Igor Jakowlewich Pavlinow of the Moscow State University, for their friendly help in determination of the degu skull and we are full of admiration to their professionalism.

Received: 05.08.2004

Authors addresses:

Grzegorz Kłysz

University of Opole, Department of Biosystematics

Oleska 22, 45-052 Opole, Poland, e-mail: gklysz@uni.opole.pl.

Robert Kaściów

University of Szczecin

Department of Vertebrate Zoology and Ethology

Wąska 13, 71-412 Szczecin, Poland, e-mail: robo1@sus.uni.szczecin.pl

Andrzej L. Ruprecht

Polna 12a /27, 87-720 Ciechocinek, Poland

Bibliography

D e m e n t i e v, G.P. 1940. Rukovodstvo po zoologii., Ed. B.S. Matveev. Pozvonoènye – Pticy. Vol. 6, see page. 238. Moscow-Leningrad.

F e r e n s, B., *R. J. W o j t u s i a k*. 1960. Ornitologia ogólna. Ptak, jego budowa i życie. Państwowe Wydawnictwo Naukowe, 1-464 pp, see page 53. Warszawa.

K o w a l s k i, K. 1991. Mały słownik zoologiczny – ssaki. Wiedza Powszechna, 1-454 pp. Warszawa.

R a c z y Ń s k i, J. *R u p r e c h t* A.L. 1974. The effect of digestion on the osteological composition of owl pellets. *Acta orn.*, 14: 25-38.

R u p r e c h t, A.L., 1974: Craniometric variations in Central European populations of *Ondatra zibethica* (Linnaeus, 1766). *Acta theriol.*, 19: 463 – 507.

V a s s a l l o, A.I., *M. J. K i t t l e i n*, C. Busch. 1994. Owl predation on two sympatric species of tuco-tucos (Rodentia: *Octodontidae*). *Journal of Mammalogy* 75:, 725-732.

W a l k e r E.P. 1975. Mammals of the world. Third edition. The John Hopkins University Press. Vol. 2. I-XVIII+645-1500 pp. Baltimore-London.

Wilson, E. D., and Mittermeier, D. A., eds. 1993 Mammal species of the world. A taxonomic and geographic reference. 2nd edition. Smithsonian Institution Press. I-XVII+1-1207, in association with the American Society Mammalogists. Washington-London.

Streszczenie

W roku 1997 przy gnieździe płomykówki z 3 pisklętami Grzegorz Kłys znalazł szczątki 3 gryzoni. Gniazdo znajdowało się na podłodze wieży kościelnej, wypełnionej zrzutkami płomykówki. Stanowisko położone jest w mieście Będzin (Górny Śląsk) – UTM CA67. Szczątki jednego z 3 gryzoni znalezionych przy gnieździe należały do młodego osobnika koszatniczki. Autorzy wysuwają tezę, że możliwe jest na tym terenie naturalne występowanie populacji koszatniczki lub, że osobnik ten został odnaleziony przez płomykówkę w postaci padliny na śmietniku.

Table 1. Standard skull measurements of the degu, *Octodon degus* (Molina) from town of Będzin (Upper Silesia)

Measurement	(mm)
Profil length	26,4
Brain – case breadth	15,0
Interorbital constriction	7,4
Mandible length	16,4
Height of ramus mandibulae	4,6
Diastema length	4,4
Maxillary tooth-row length	5,8
Mandibular tooth-row length	6,6
Skull weight without mandible	0,319 G
Skull weight total	0,450 G
Brain – case capacity	0,84 cm ³

Skull measurements according to ALR data (Ruprecht, A.L., 1974)