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Hair brush organs in Viscachas, *Lagostomus maximus*

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Viscachas are rare zoo animals and not of great economic importance. This is probably one of the main reasons why the amount of scientific data of the species is rather small. Only four zoos in the world are breeding this species (Olney 1982). Recently, the Zurich Zoo viscacha females started to abandon their offspring. Therefore, the head keeper of the Small Mammals Section, Mr. Heinz Kohler, was obliged to hand-raise them.

Viscachas of all ages have a rather unexpected and striking morphology of their hind feet: the dorso-medial fleshy part of the longest, i.e. second toe is, compared to the

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Fig. 1. Habitus of a young viscacha, three weeks of age. Note the remarkably enlarged distal part of the second hind toe. *Fig. 2.* View of a viscacha's hind foot, three weeks of age. First and second toes are clearly visible. The upper part (more proximal region on the dorsal side) of the second toe shows normal hair cover, whereas the lower part (more disto-medial region on the dorsal side) is covered with thick bristle-like hair thus forming a brush. *Fig. 3.* Hind foot of a three weeks old viscacha with widely spread toes. Both main brush-like organ on the second toe and smaller brush-like organ on the first toe are visible

corresponding parts of the neighbouring toes, bulb-like enlarged (fig. 1). Macroscopical investigation shows that the upper part of this enlarged area (i.e. more proximal region on the dorsal side of the toe) is covered with fur not differing from the one on the neighbouring toes (fig. 2), whereas the lower part of the area in question (i.e. more distomedial region on the dorsal side of the toe) shows a completely different structure: the hairs are shorter, thicker, and stiffy. The distance between one hair to another is larger than between hairs in "normal" fur. Thus, the hairs of the lower part of the enlarged area (i.e. the distomedial part which is nearest to the claw) on the second hind toe of viscachas can be described as bristles, and the whole area in question is a brush-like organ. A similar, but smaller brush-like organ is found on the first toe of the hind foot (fig. 3).

The scratching movement of a viscacha's hind leg seems to be rather non-effective because the claws do not scratch the fur as it is the case in grooming behaviour of most mammals. On the contrary, the observer gets the impression that the claws touch neither fur nor skin, thus the claw movement is running idle.

Most probably, during this scratching movement by the hind leg, the hair brush organ on the dorso-medial part of the tips of both second and first toes are touching and therefore grooming the fur. Thus the real grooming organ is not the claw itself but rather this brush-like organ described above.

The evolution of such a specialized grooming organ indicates the importance of grooming behaviour in ground-dwelling mammals. Analogous organs are found in other species of the same ecological niche, e.g. hyraxes, *Procavia* spp., with a "double" claw on the second toes of the hind feet (Hahn 1959), and Lemurs, *Lemur* spp. with comb like lower jaw incisors and canines (Ankel 1970).

In the last century, Hudson (1872) mentioned this brush-like organ in a footnote. Later, the knowledge of this very specialized structure was forgotten. Neither Seele (1968) in his monographic overview on skin and hair of Chinchillidae nor Dubost (1970) in his comparison of the grooming claws of several mammalian species did refer to this unique hair-brush organ in viscachas.

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