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## WISSENSCHAFTLICHE KURZMITTEILUNGEN

### Cases of dental malocclusion in populations of Red foxes (*Vulpes vulpes*) in the state of Victoria, Australia

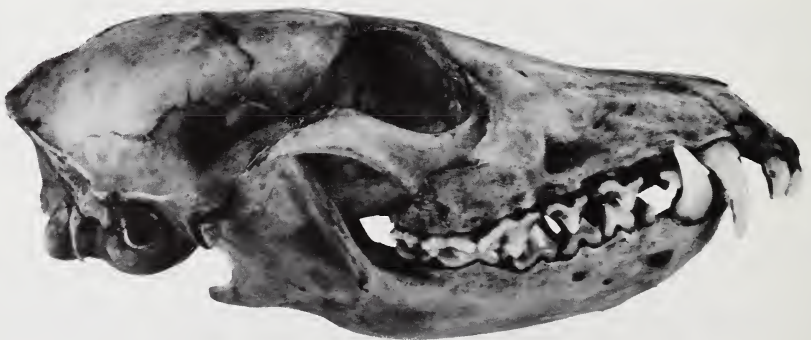
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BOUWMEESTER et al. (1989) described the high incidence of a pronounced protrusion of the maxillary incisors over the mandibular incisors which they found in skulls of red foxes (*Vulpes vulpes*) in the North Holland Dune Reserve (NDH) in the Netherlands. This aberration was present in 6.7 % of the skulls and proved, through skull measurements, to be the result of a shortening of the front part of the mandibles. The aberration was thought to be under monogenetic control. Its high incidence could be explained by the history of the fox population in the NDH. Before 1968 the NDH was not inhabited by red foxes. In that year four cubs from the same litter were set free, thus creating a small and isolated gene pool. Compared to normal red foxes, affected animals are likely to be at an ecological disadvantage. BOUWMEESTER et al. (1989) expect the incidence of the aberration to decline in the future. This view is supported by the fact that among several thousand red foxes from England, where no such genetic bottleneck occurred, such anomaly was found only a couple of times. Not one case was reported among several thousand red foxes from Sweden (BOUWMEESTER et al. 1989).

In a study on skulls of red foxes from Australia three out of 39 skulls (= 7.7 %) showed



*Fig. Skull of female fox, Vulpes vulpes, from around Geelong, Victoria, Australia, I-1989 (ZMA 24.065) with shortened mandibles*

a similar shortening of the mandible. These skulls were collected around Geelong, Victoria (38° 27' S, 144° 51' E). In a collection of 22 skulls from the Western Australian Museum in Perth one skull (= 4.5 %) showed the aberration. Palatal length was not measured on this specimen. All the 56 fox skulls in the collection of B. J. COMAN (at Strathfieldsaye, Australia) which were mostly from different areas in Victoria, were normal, just like 42 skulls from the Museum of Victoria in Melbourne and 5 skulls from the Australian Museum in Sydney.

Considering the history of Australian red foxes, which were introduced in Australia over 130 years ago (ROLLS 1969) and have been isolated since then, the incidence of the aberration was thought to be remarkably high, i.e. 2.5 % of all the skulls mentioned above.

The Figure shows a specimen with shortened mandible out of the Geelong area.

To investigate the character of this aberration a number of skull measurements were taken, namely condylo-basal length, palatal length and mandible length. By calculating the palate/condylo-basal ratio and the mandible/condylo-basal ratio and by comparing these calculations with the values for normal red foxes from the sample, it became clear that this was a case of shortened mandibles. This is important to know because the aberration could also have been caused by an elongated rostrum (BOUWMEESTER et al. 1989).

It goes beyond the scope of this contribution to speculate on causes of the established high incidence of the aberration. Further research is needed on genetic and ecological backgrounds to elucidate the reason for the described phenomenon. It seems, however, that the small founder population in Australia has played an important role.

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