

WISSENSCHAFTLICHE KURZMITTEILUNGEN

**Note on the skull size in the two sympatric Mouse Deer species,
Tragulus javanicus (Osbeck, 1765) and *Tragulus napu*
(F. Cuvier, 1822)**

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At present, within the family Tragulidae, the sister-group of the Cervidae, four species are recognized: viz. *Hyemoschus aquaticus* (Ogilby, 1841), living in tropical West Africa and Central Africa north of the Congo River; *Tragulus meminna* (Erxleben, 1777), occurring on Sri Lanka (Ceylon) and in the south of peninsular India, and the largely sympatric species *Tragulus javanicus* (Osbeck, 1765) and *Tragulus napu* (F. Cuvier, 1822), both found in southeast Asia and on islands west of the Strait of Makassar. The last two species strongly resemble each other. The only clear differences are found in their colour pattern, mainly of the throat area, and in size; *T. javanicus* being the smaller species and *T. napu* the larger one. Size differences are most distinct where the species live side by side, whereas in allopatric populations, *T. javanicus* can even be larger than *T. napu*.

When two species overlap geographically, the situation in which the differences between them are accentuated in the zone of sympatry, and weakened or lost entirely in parts of their ranges outside this zone is called: Character displacement; see BROWN and WILSON 1956. *T. javanicus* and *T. napu* have been suggested (Dr. A. C. V. VAN BEMMEL – in verbis) to be a nice example of this phenomenon, however without giving exact data.

During the first part of a study of the taxonomy and speciation of Tragulidae, over 200 skins and skulls of *T. javanicus* and *T. napu* have been studied, forming part of the collections of the Institute of Taxonomic Zoology (Zoological Museum) in Amsterdam, the Rijksmuseum van Natuurlijke Historie at Leiden and the British Museum (Natural History) in London. The author is grateful to the curators of the mentioned collections for the permission to study the material.

The differences in the dimensions of the skins of the two species were apparent and often documented by the measurements provided by the collectors. Nevertheless, to avoid possible mistakes caused by different ways of preparing the skins and taking the measurements, only the skull dimensions (taken by the author) were used. To simplify the graphic representation of the results, only the condylobasal lengths are given (see figure 1).

Comparing the condylobasal lengths of the skulls of allopatric populations with those of sympatric populations, it is obvious that character displacement in skull size is present in the two Mouse Deer species studied. It is necessary, however, to discuss also other influences which may have caused the observed differences. First the rule of BERGMANN, which assumes that larger body size is selectively advantageous in colder climates. According to figure 1, this could be a possible explanation for the differences found in the more northern mainland populations and the more southern populations of Sumatra and Borneo of *T. napu*, were it not, that the differences in climate between the mentioned areas are slight. All the areas are within the region of tropical rain forests, although in the north

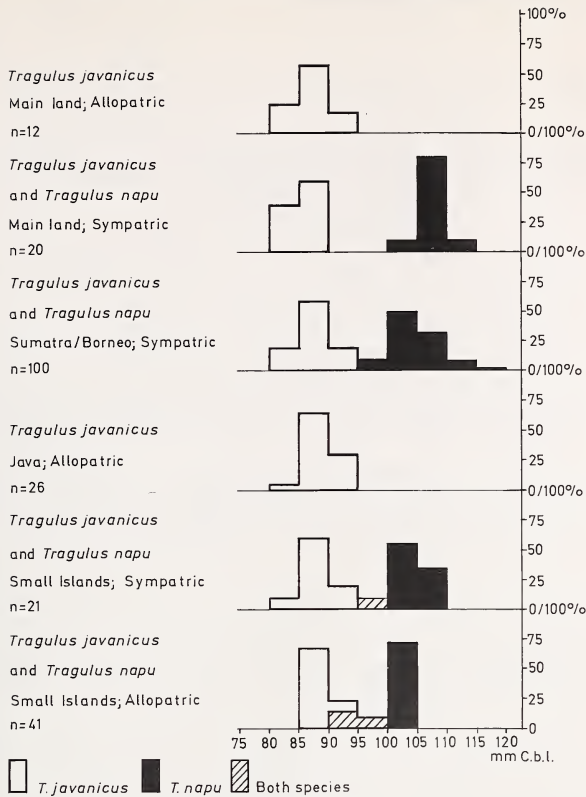


Fig. 1. Condylobasal lengths of 220 skulls of *Tragulus javanicus* and *Tragulus napu*, living allopatrically or sympatrically

somewhat more influenced by the different monsoons than in the south. Another phenomenon to be taken into account is that in mammals, representatives of species occurring on small islands sometimes tend to be smaller than members of the same species living on large islands and on the mainland. This phenomenon may play a role in *T. napu*, but not in *T. javanicus* (see figure 1). It can be ignored with regard to the differences observed between *Tragulus* species living on small islands, sympatrically or alone.

Summarizing, *Tragulus javanicus* and *Tragulus napu* show character displacement in skull size, when living sympatrically. They tend to reach more intermediate sizes when living without congeners.

Reference

BROWN, W. L., JR.; WILSON, E. O. (1956): Character displacement. *Syst. Zool.* 5, 49-64.

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