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**MORPHOLOGICAL VARIABILITY AND ITS DEPENDENCE ON THE SIZE OF
SAMPLED POPULATION – STUDY WITH *CARABODES SUBARCTICUS*
TRÄGÅRDH, 1902 ARMoured MITES (ACARI: CRYPTOSTIGMATA).**

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The question of sampled population size of various little known groups of organisms, for instance, Cryptostigmata mites, so far have been rarely discussed and quite often left without notice (Cardini, Elton 2007). Species descriptions and morphometrical studies of these mites mainly have been based on relatively small samples of individuals for statistically significant conclusions ($n < 25$) (Grandjean 1931; Ramsay, Luxton 1967).

In present study, adult individuals of *Carabodes subarcticus* Trägårdh, 1902 cryptostigmatids have been collected in coniferous forest (Dundaga municipality, Latvia) and used to test variation of morphology and its dependence on the gradient of minimal sampled population size. As a reference population, 304 individuals were randomly selected to represent relatively high morphological variability. Five different morphological traits were measured for each individual using Confocal Laser Scanning Microscopy. Relationship between sample size and morphological variation was observed by making simulation study (10000 samples of original data in each size step) and calculating percentage of cases when range of sample values were within certain distance (less than 10%, 25% or 50%) of reference population value range for each morphological trait (R Development Core Team 2013).

If a small sample size was used ($n=25$) only in less than 1% of cases the observed morphological variability was within 10% distance compared to reference population. By setting larger populations of *C. subarcticus*, possibility to have similar morphological variability to the reference population increased among all tested certain distances.

No significant relationships between minimal sample size and variation coefficient or standard deviation were found. Results have been discussed by their significance and suitability for comparisons with natural subpopulations. Brief discussion on practical use of present results in further morphometrical and taxonomical studies is proposed.

References

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